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REPORT TO THE MARITIME SAFETY COMMITTEE

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1 GENERAL

1.1 The Sub-Committee on Safety of Navigation held its fiftieth session from 5 to 9 July 2004 at the Headquarters of the Organization, under the chairmanship of Mr. K. Polderman (The Netherlands). The Vice-Chairman, Dr. V.I. Peresypkin (Russian Federation), was also present.

1.2 The session was attended by representatives of the following countries:

ALGERIA	LATVIA
ANTIGUA AND BARBUDA	LEBANON
ARGENTINA	LIBERIA
AUSTRALIA	LITHUANIA
BAHAMAS	MARSHALL ISLANDS
BANGLADESH	MEXICO
BELGIUM	MOROCCO
BRAZIL	NETHERLANDS
CANADA	NEW ZEALAND
CHILE	NIGERIA
CHINA	NORWAY
COLOMBIA	PANAMA
COTE D'IVOIRE	PAPUA NEW GUINEA
CUBA	PERU
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	PHILIPPINES
DENMARK	POLAND
ECUADOR	PORTUGAL
EGYPT	REPUBLIC OF KOREA
ESTONIA	ROMANIA
FINLAND	RUSSIAN FEDERATION
FRANCE	SAUDI ARABIA
GERMANY	SINGAPORE
GREECE	SPAIN
ICELAND	SWEDEN
IRAN (ISLAMIC REPUBLIC OF)	TURKEY
IRELAND	UKRAINE
ITALY	UNITED KINGDOM
JAPAN	UNITED STATES
KUWAIT	VENEZUELA

and of the following Associate Member of IMO:

HONG KONG, CHINA

1.3 The session was attended by representatives from the following United Nations and specialized agencies:

FOOD AND AGRICULTURE ORGANIZATION (FAO)

1.4 The following intergovernmental and non-governmental organizations were also represented:

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)
COMMISSION OF THE EUROPEAN COMMUNITIES (EC)
FRIENDS OF THE EARTH INTERNATIONAL (FOEI)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)
INTERNATIONAL MOBILE SATELLITE ORGANIZATION (IMSO)
INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)
INTERNATIONAL CONFEDERATION OF FREE TRADE UNIONS (ICFTU)
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND
LIGHTHOUSE AUTHORITIES (IALA)
INTERNATIONAL RADIO-MARITIME COMMITTEE (CIRM)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL MARITIME PILOTS ASSOCIATION (IMPA)
INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION (IAIN)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS
(INTERTANKO)
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS
(INTERCARGO)
INTERNATIONAL SAILING FEDERATION (ISAF)
INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)
INTERNATIONAL LIFEBOAT FEDERATION (ILF)
INTERNATIONAL ASSOCIATION OF PORTS AND HARBOURS (IAPH)
INTERNATIONAL COUNCIL OF MARINE INDUSTRY ASSOCIATIONS (ICOMIA)
INTERNATIONAL COUNCIL OF CRUISE LINES (ICCL)
WORLD WIDE FUND FOR NATURE (WWF)
INTERNATIONAL HARBOUR MASTERS' ASSOCIATION (IHMA)

1.5 In welcoming the participants, the Secretary-General reiterated his plea to the Council and Assembly last year, inviting all with an interest in the affairs of IMO and the shipping industry to join forces to create a safer, more secure and environmentally friendly maritime world.

Referring to the fiftieth session of the Sub-Committee, and to mark this golden jubilee occasion, he recalled his personal association with the Sub-Committee which he had served as Secretary for four years and whose first session was held at the old Headquarters of the then Inter-Governmental Maritime Consultative Organization (IMCO), in Berners Street, from 27 June to 1 July 1966, more than 38 years ago. At that first session, there were a total of thirty-three participants only and, judging by the number of delegates present at the current session, all should be pleased at the progress the Sub-Committee had made since, not only in the number of Member Governments and international organizations participating in its work but also in the quantity and, more importantly, the quality of its output, which had contributed so significantly to the achievement of the objectives of the Organization.

He recalled that over the years, many new technologies had emerged in the navigational field e.g. automatic pilots, heading control systems, ARPAs, electronic navigational charts and ECDIS, integrated bridge systems and AIS and during the same time, the Sub-Committee had developed numerous performance standards for the emerging shipborne navigational equipment

which had also significantly contributed to enhanced safety of navigation. The Sub-Committee's work towards revising the Collision Regulations in 1972 and keeping them updated to meet new navigational conditions and circumstances had, together with better training of watchkeepers, been of immense value as could be clearly established by the dramatic fall in the number of collisions worldwide. By establishing routeing measures, including traffic separation schemes, areas to be avoided and vessel traffic services and by introducing other measures around the world to improve navigation in converging areas, areas of dense traffic or environmentally sensitive areas, the Sub-Committee had also contributed significantly to the enhancement of navigational safety and environmental protection in areas necessitating particular care.

He stated that it was with immense pleasure that he congratulated the Sub-Committee for all the good work it had done so far and wished everyone luck and success for the future in their contribution to IMO's perennial efforts to enhance maritime safety, security and protection of the marine environment.

The Secretary-General took the opportunity to pay a very special tribute to the officers, Chairmen and Vice-Chairmen of the Sub-Committee and all the Sub-Committee Working Group Chairmen for their invaluable contribution to its success ever since the Sub-Committee's first session and, in particular, to its Chairmen: Captain Sohnke (Germany), Captain Morrison (Canada), Captain Salvesen (Norway), Mr. Funder (Denmark), Mr. Stene (Norway), Commander Panopoulos (Greece), Mr. Leclair (France) and the current Chairman, for all of them leading the Sub-Committee so ably over the last 38 years of its existence. He also mentioned, with deep appreciation, the outstanding contribution of Captain Lameijer (Netherlands) as Chairman of the Ships' Routeing Working Group for many years. He also praised and thanked the Sub-Committee's Secretaries, Captain Sdougos, Captain Repkin, Larry Goll, Walter de Goede, Captain Thompson and Captain Singhota for their painstaking and dedicated services to the Sub-Committee since its establishment.

With respect to the entry into force on 1 July of the special measures to enhance maritime security, the Secretary-General acknowledged the major effort made by Governments and the shipping and port industries to improve maritime security in the weeks and months leading up to that date. The information collated by the Secretariat had indicated that more than 86% of the ships and 69% of port facilities liable to the ISPS Code had their security plans approved by the 1 July deadline. Although these percentages demonstrated a significant improvement compared with those available a fortnight earlier, he stressed that the efforts to achieve 100% compliance should continue unabated. He had received with relief and satisfaction reports indicating that the 1 July had passed without significant problems causing serious disruptions to seaborne trade. He hoped that any teething problems were minimal and that common sense would prevail in addressing them. The shipping and port industries had now entered a new era in their joint efforts to protect the international trade against the threat of terrorism. The success in, henceforth, maintaining vigilance and ensuring continued compliance with the approved security requirements and procedures would certainly provide an indication of how successful the security net put in place had been.

The Secretary-General recalled that during the last Council meeting, he had emphasized the need to keeping shipping lanes of strategic importance and significance safe and open to international maritime traffic, thereby ensuring the uninterrupted flow of traffic therethrough. The Council had shared his concerns and authorized him to work with parties concerned so as to act together to protect, to the best of our abilities, the interests of safety, security, the environment, seaborne trade and the world economy as a whole, while observing the sovereign rights of the coastal States concerned.

With respect to the Sub-Committee's agenda for the current session he highlighted several substantive issues of operational significance namely the consideration of protective measures for particularly sensitive sea areas in response to MEPC's request for consideration of proposals in respect of the Torres Strait and the Western European waters. The issue of PSSAs had attracted a great deal of attention, not only from the maritime community and environmentalists but also from the United Nations General Assembly which, in a resolution on Oceans and the Law of the Sea, adopted last December, had noted with interest the ongoing discussions in IMO. The Sub-Committee's input would assist the MEPC in its further work on the PSSAs concerned based on considerations, from the navigational safety point of view, of the proposed extension of the existing Great Barrier Reef compulsory pilotage arrangements to cover the Torres Strait region for the Great Barrier Reef PSSA; and of the proposal for the establishment of a 48-hour mandatory ship reporting system for the Western European waters PSSA. He was confident that both issues would be tackled with diligence and a sense of pragmatism.

As to proposals for ships' routing, ship reporting and other measures aimed at enhancing the safety of navigation in areas of identified navigational hazards and environmentally sensitive sea areas he drew attention to those calling for the establishment of new traffic separation schemes "In the approaches to the Cape Fear river" and "Off Mina Al-Ahmadi" including new measures calling for the establishment of an area to be avoided and a mandatory no anchoring area in the Gulf of Mexico as well as proposals for amendments to the existing traffic separation schemes in the approaches to the Haro Strait, in Puget Sound and in the Strait of Georgia.

With respect to navigational aids and related matters, the Secretary-General explained that the Sub-Committee was expected to review and finalize the draft performance standards for the presentation of navigation-related information. The wide adoption of standardized symbols and displays would go a long way towards assisting ships' officers becoming familiar and competent in making full and effective use of shipborne navigational equipment.

Turning to the safety of fishing vessels, the Secretary-General stressed that this had been a matter of concern to IMO since the Organization's inception, but the differences in design and operation between fishing vessels and other types of ship had proved to be an obstacle to their inclusion in the SOLAS and Load Lines Conventions. It was, therefore, disappointing that the Protocol IMO specifically designed to address fishing vessel-related safety issues had not as yet come into force, **eleven** years after its adoption; twenty-seven after the adoption of the original instrument.

At the last Council session, the relevance of the numbers of fishing vessels required for the Protocol to enter into force was questioned in view of the changes to the world fishing fleet since the 1977 Torremolinos Convention and the 1993 Protocol were adopted. The Council had instructed the Secretariat to review fishing vessel fleet statistics in order to provide a basis of further discussion on the conditions for entry into force of the 1993 Protocol. Notwithstanding this action, he encouraged Governments to take expeditious action to ratify the Protocol. He recalled in this context that NAV 49 had prepared amendments to the draft revised Fishing Vessel Safety Code and the Voluntary Guidelines aiming and updating the navigational provisions of the Code and the Sub-Committee was expected to review and revise the final texts of the relevant chapters so that the revised Code could be approved by MSC 79 in December 2004.

1.6 The Chairman thanked the Secretary-General for his words of encouragement and stated that the Secretary-General's advice and requests would be given every consideration in the Sub-Committee's deliberations. The Chairman then also reflected on the jubilee meeting of the Sub-Committee. In his speech he mentioned a number of issues that the Sub-Committee had dealt with in the past, and presented as his views that the Sub-Committee had made important

contributions to the safety of navigation worldwide. He underlined the ultimate responsibility of masters for the safe navigation of their ships, and reminded the Sub-Committee that its primary objective should be to develop instruments that facilitate and assist mariners to fulfil that responsibility.

Adoption of the agenda

1.7 The Sub-Committee adopted the agenda, as approved by MSC 78 (NAV 50/2/2, annex 3).

2 DECISIONS OF OTHER IMO BODIES

2.1 The Sub-Committee noted, in general decisions and comments (NAV 50/2, NAV 50/2/1 and NAV 50/2/2), pertaining to its work made by MEPC 49, SLF 46, LEG 87, C/ES.22, A 23, FP 48, STW 35, COMSAR 8, DE 47, MEPC 51, LEG 88 and MSC 78 and considered them under the relevant agenda items.

2.2 The Sub-Committee also noted the decision of the twenty-second extraordinary session of the Council (NAV 50/2) concerning the sub-committees, their work and reporting procedures. The Sub-Committee noted that the Council, in considering the outcomes of SLF 46 and DSC 8 with regard to the trial reporting system, had:

- .1 noted that, under the provisional arrangements, the issue of the availability of working groups' reports in all working languages for consideration on the penultimate day of the session was not fully resolved, especially if the reports in question were voluminous;
- .2 agreed that the trial period of the provisional system be extended to cover all the sub-committees which will meet between now and the next session of the MSC and the MEPC;
- .3 invited the MSC and the MEPC to consider the conclusions and recommendations of the reporting sub-committees and to draw their own recommendations, which they should submit to C 93 for consideration and action, as appropriate;
- .4 agreed that all the working papers approved by the sub-committees in plenary should be posted on the IMO website; and
- .5 agreed that, until further notice, sub-committees should produce an approved final summary of decisions to enable the Committee(s) to take action as may be requested at the first opportunity after a sub-committee's session (as done by SLF 46 and DSC 8).

2.3 The Sub-Committee further observed that the Council at its ninety-second session, noted that, due to lack of time, MSC 78 had postponed consideration of the issue of the new reporting procedure. On the issue of continuing the use of the new reporting procedure, the Council had decided to continue the trial reporting system until the end of 2004 and further decided that NAV 50 should also try that procedure and authorized MSC 79, taking into account the views of MEPC 52, to make appropriate decisions on the future of the new procedure for implementation by sub-committees meeting during the first half of 2005; and to report to C 94 seeking endorsement of its action.

3 ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

New Traffic Separation Schemes (TSSs)

New Traffic Separation Scheme in the Approaches to the Cape Fear river

3.1 At the request of the Government of the United States (NAV 50/3/3), the Sub-Committee discussed briefly a proposal for the establishment of a new traffic separation scheme (TSS) "In the Approaches to the Cape Fear river".

Establishment of new recommended Traffic Separation Schemes, Ship Reporting System, New Anchorage Areas and Pilot Boarding Positions "Off Mina Al-Ahmadi"

3.2 At the request of the Government of Kuwait (NAV 50/3/7), the Sub-Committee discussed briefly a proposal for the establishment of two ships routeing systems, including the rearrangements of anchorages and the establishment of new ones and ships' reporting systems "Off Mina Al-Ahmadi".

3.3 The delegation of the Islamic Republic of Iran expressed its objection to the inappropriate name used for the sea area of the Persian Gulf, in document NAV 50/3/7. The delegation also believed that matters of this kind could have been clarified and resolved by the Organization, well prior to reproduction under IMO logo and reference number. This could have been achieved at least, by inserting an appropriate footnote in the relevant page.

3.4 The Secretariat explained that the Organization had followed the United Nations practice as stated in the United Nations Editorial directives ST/CS/SER.A/29 of 10 January 1990 and ST/CS/SER.A/29/Rev.1, which states that "... when material provided by a Government is circulated, or when a resolution or decision of a deliberative body of the United Nations is adopted, the Secretariat reproduces, without any change, the terminology used by the speaker, Government or deliberative body concerned." Document NAV 50/3/7 was a document submitted by Kuwait which had been reproduced by the IMO Secretariat in accordance with the usual practice.

Amendment to the existing Traffic Separation Schemes (TSSs)

Traffic Separation Schemes in Puget Sound and its Approaches in Haro Strait, Boundary Pass, and in the Strait of Georgia

3.5 At the request of the Governments of Canada and the United States (NAV 50/3/1), the Sub-Committee discussed briefly a proposal for adding traffic separation schemes (TSS's) and other routeing measures "In Haro Strait and Boundary Pass" and amending the existing TSS's "In Puget Sound and Its Approaches" and "In the Strait of Georgia".

Amendment to the existing Traffic Separation Scheme in the Approaches to Chesapeake Bay

3.6 At the request of the Government of the United States (NAV 50/3/4), the Sub-Committee discussed briefly a proposal to amend the existing traffic separation scheme (TSS) "In the Approaches to Chesapeake Bay".

Amendments to the Existing Traffic Separation Schemes – New Traffic Lanes for Ships carrying Dangerous or Pollutant Cargoes in Bulk "Off Cape Roca" and "Off Cape S. Vicente"

3.7 At the request of the Government of Portugal (NAV 50/3/8), the Sub-Committee discussed briefly a proposal to amend the existing traffic separation schemes (TSS) “Off Cape Roca” and “Off Cape S. Vicente”, by creating two additional traffic lanes for ships carrying dangerous or pollutant cargoes in bulk.

Revoking of the existing TSS "Off Berlenga"

3.8 At the request of the Government of Portugal (NAV 50/3/9), the Sub-Committee discussed briefly a proposal to revoke the existing traffic separation scheme “Off Berlenga”, (paragraph 3.12 refers).

Amendment to the existing Traffic Separation Scheme "In the approaches to Puerto San Martin"

3.9 At the request of the Government of Peru (NAV 50/3/10), the Sub-Committee discussed briefly a proposal to amend the existing traffic separation scheme "In the approaches to Puerto San Martin".

Routeing measures other than Traffic Separation Schemes (TSSs)**Establishment of an area to be avoided and a mandatory No-Anchoring Area in the West Cameron Area of the Northwestern Gulf of Mexico**

3.10 At the request of the Government of the United States (NAV 50/3/2), the Sub-Committee discussed briefly a proposal to establish an area to be avoided (ATBA) and a mandatory No-Anchoring Area for the purposes of safety, security, and vessel traffic management in the vicinity of the El Paso Energy Bridge deepwater port to be located in the Gulf of Mexico.

Amendment to the Notes for the Deep-water Route in the Southern Approach to Chesapeake Bay

3.11 At the request of the Government of the United States (NAV 50/3/5), the Sub-Committee discussed briefly a proposal to amend the Notes in the description of the existing deep-water route “In the Southern Approach to Chesapeake Bay”.

Designation of an area to be avoided in the Region of the Berlengas Islands

3.12 At the request of the Government of Portugal (NAV 50/3/9), the Sub-Committee discussed briefly a proposal for the establishment of an area to be avoided, consisting of the area defined as an inshore traffic zone in the existing traffic separation scheme "Off Berlenga", which is to be revoked (paragraph 3.8 refers).

Amendments to the General Provisions on Ships' Routeing and Guidelines and Criteria for Ship Reporting Systems

Geographical co-ordinates for Ships' Routeing and Ship Reporting Systems

3.13 At the request of the Government of Norway (NAV 50/3/11), the Sub-Committee discussed briefly a proposal to standardize the use of WGS 84 datum for ships' routeing and ship reporting systems and to amend the General Provisions on Ships' Routeing (GPSR) (resolution A.572(14), as amended) and also the Guidelines and Criteria for Ship reporting systems (resolution MSC.43(64), as amended by resolution MSC.111(73)).

ASSOCIATED PROTECTIVE MEASURES (APMs) FOR PSSAS

Torres Strait PSSA: Associated Protective Measure (APM)– Compulsory Pilotage

3.14 The Sub-Committee noted that MEPC 49 (MEPC 49/22, paragraph 8.25) had agreed to approve, in principle, the extension of the existing Great Barrier Reef PSSA to include the Torres Strait Region and requested NAV 50 to consider the extension of the compulsory pilotage an Associated Protective Measure (APM). In approving, in principle, this area as a PSSA, MEPC 49 noted that, consistent with article 236 of UNCLOS, the APM would not apply to sovereign immune vessels.

3.15 Prior to consideration of document NAV 50/3, the Chairman outlined his proposed course of action for progressing this issue. He suggested that the Sub-Committee should focus only on the technical and operational aspects of the two associated protective measure proposals for the Torres Strait and the Western European Waters PSSAs. This was due to the fact that MEPC 49 had dealt with the legal aspects of the PSSA proposals (in the case of the Western European Waters PSSA, the matter had even been considered by the Legal Committee (LEG 87/17, paragraphs 194 to 203 and annex 7)). The NAV Sub-Committee should not debate the legal aspects because neither was it supposed to, nor did it have the competence to do so. In the case of the Australian and Papua New Guinea proposal, the Sub-Committee (and the Ships' Routeing WG) should look into the practical propositions on mandatory pilotage from an operational point of view only. Any interventions in Plenary on the legal aspects would be reflected in the Sub-Committee's report for possible further consideration by MEPC and MSC in the final approval procedure of the PSSAs and the Associated Protective Measures.

3.16 The delegations of the Russian Federation and of Panama, supported by several other delegations, did not agree that the legal aspects had been considered adequately at MEPC 49 and considered that resolution A.927(22) - Guidelines for the designation of special areas under MARPOL 73/78 and guidelines for the identification and designation of particularly sensitive sea areas were inadequate for these important issues. The delegation of Panama was of the view that the matter should be regarded as a new work item and should be progressed through the MSC and also queried the jurisdiction of IMO to consider proposals for compulsory pilotage in international waters in the absence of any appropriate instrument which could be used to regulate such requirements. The delegation of the Russian Federation was of the opinion that an amendment to an IMO Convention, e.g. SOLAS was necessary prior to consideration of compulsory pilotage issues.

3.17 The Sub-Committee considered, on a preliminary basis, the proposal by Australia and Papua New Guinea (NAV 50/3) to extend the existing Great Barrier Reef compulsory pilotage arrangements to the Torres Strait (Associated Protective Measure), as part of the Associated Protective Measure for the PSSA proposal for this region (MEPC 49/8). The Sub-Committee noted with interest the information provided by Australia (NAV 50/INF.2) which described an IALA qualitative and quantitative waterway safety assessment recently carried out in the Torres Strait by representatives of the United States and the Canadian Coast Guards. This assessment indicated that compulsory pilotage could reduce the risk of groundings by 45% and collisions by some 57%, while in specific areas of the Strait such as the Prince of Wales Channel compulsory pilotage could reduce the risk of groundings by some 54% and collisions by some 67%.

3.18 In introducing the documents (NAV 50/3 and NAV 50/INF.2), the delegation of Australia summarized the issues relating to the safety of navigation as set out in the detailed submission for the PSSA to MEPC 49 (MEPC 49/8). They stated that the whole area within which pilots would be required in the proposed extended PSSA was located within the territorial waters of Australia. The delegation of Australia also stated that the carriage of a properly skilled and qualified person as a pilot considerably reduced the risk of a shipping incident in the Torres Strait and referred to an analysis by Det Norske Veritas in 2001 which indicated that compulsory pilotage would reduce the risk by some 35%.

3.19 The delegation of Papua New Guinea in elaborating on the proposal, requested the Sub-Committee to take into account the many indigenous peoples who subsist by fishing in the Straits and whose food source and sole livelihood would be badly affected by any environmental disaster in the Straits. The delegation of Papua New Guinea was also of the view that the present IMO recommendation (resolution A.710(17)) was no longer sufficient given the increasing rate of non-compliance.

3.20 The Sub-Committee also took into account the relevant comments by the International Chamber of Shipping (ICS) (NAV 50/3/12) on document NAV 50/3. ICS stated its unqualified support for the extension of the PSSA into the Torres Strait but expressed concerns, with regard to the compulsory pilotage aspects, if such a compulsory pilotage scheme would be applied to areas beyond territorial seas, because this would create a precedent for many to follow in other regions. This was supported by several industry observer delegations.

3.21 Following an initial discussion on the way forward in which some delegations supported the view of the Chairman and some were opposed, the Chairman proposed that the Sub-Committee should take the following course of action:

- .1 the Sub-Committee and its working group should concentrate on the operational and technical aspects of the proposed compulsory pilotage scheme from the points of view of technical feasibility and proportionality;
- .2 any concerns raised on the legal issues should not be discussed at this session but should be reflected in the report for further consideration by the Committee;
- .3 recommendations of the Sub-Committee on technical feasibility and proportionality of the proposed pilotage scheme should be forwarded to MEPC 52;
- .4 any legal aspects should be raised to LEG 89; and

- .5 MSC 79 should take the final decisions, taking into account any decision of MEPC 52 on designation of PSSA and any discussion at LEG 89 on the legal aspects involved in the compulsory pilotage scheme as the APM.

3.22 In the ensuing debate, several delegations considered that compulsory pilotage in a strait used for international navigation could not be allowed as it was against the provisions of UNCLOS Article 38 which states that ships and aircraft of all nations enjoy the right of transit passage through straits used for international navigation, which cannot be hampered. It was pointed out that the freedom of navigation through a strait used for international navigation superseded the rights of the coastal state to regulate traffic in its territorial sea. In their view, there was no precedent for IMO to approve compulsory pilotage in international waters, neither was there any jurisdiction in any IMO convention. Whilst sympathy was expressed for the environmental aspects, concern was also expressed at the precedent that this would set for other areas in international waters.

3.23 Several other delegations and one observer delegation supported the proposal by Australia and Papua New Guinea for the reasons given in the proposal. The observer from IMPA in supporting the proposal sought to ensure that a fully regulated pilotage scheme was introduced in the Straits. Other delegations sympathized with their proposal but had serious reservations in relation to the legal aspects. The majority of the delegations that spoke agreed with the Chairman's proposal that only the purely operational aspects should be discussed by the Ships' Routeing Working Group and that the report should also reflect the concerns raised on the legal issues, and that the outcome of the Sub-Committee's discussions should not prejudice in any way further discussion on legal issues.

3.24 Whilst the debate mainly concentrated on the legal aspects of the Torres Strait proposal, some delegations were of the opinion that the same legal issues, in principle, also applied to the Western European PSSA and should be addressed by the Committees accordingly.

Western European Waters PSSA: Associated Protective Measures (APM) – mandatory ship reporting system

3.25 The Sub-Committee noted that MEPC 49 (MEPC 49/22, paragraphs 8.25.2 and 8.25.3), in view of the majority support, had approved, in principle, the designation of the Western European Waters as a PSSA, with the provision that the area was reduced to bring the easterly line off the Shetlands Isles to 0° longitude; and referred the 48-hour mandatory reporting measure to NAV 50 for consideration.

3.26 At the request of the Governments of Belgium, France, Ireland, Portugal, Spain and the United Kingdom (NAV 50/3/6), the Sub-Committee considered on a preliminary basis, a proposal to establish a new mandatory ship reporting system for ships entering the Western European Waters Particularly Sensitive Sea Area in accordance with the provisions of SOLAS regulation V/11, an Associated Protective Measure, as part of the PSSA submission for this region.

3.27 With respect to a clarification concerning the cost to ships to comply with the proposed mandatory ship reporting system, the delegation of the United Kingdom supported by the other sponsors of the proposal confirmed that it was not intended to involve any costs to the ships participating in the system.

Terms of Reference for the Working Group

3.28 After preliminary discussion as reported in paragraphs 3.1 to 3.27 above and having also considered subitem 18 on COLREG's issue, the Sub-Committee re-established the Ships' Routeing Working Group and instructed it, taking into account any decisions of, and comments and proposals made in Plenary as well as relevant decisions of other IMO bodies (item 2):

- .1 to consider all documents submitted under item 3 regarding routeing of ships and related matters and prepare routeing and reporting measures, as appropriate and recommendations for consideration and approval by Plenary;
- .2 to consider the instructions of MEPC 49 including the documents submitted under item 3 regarding PSSAs including the associated protective measures (NAV 50/3, NAV 50/3/12, NAV 50/3/6 and NAV 50/INF.2) and:
 - .1 advise the Sub-Committee on the outcome of an assessment from a purely operational point of view:
 - the proposed extension of the existing Great Barrier Reef compulsory pilotage requirements to the Torres Strait on two aspects, namely:
 - .1 are the proposed measures feasible and proportionate in their effects on safety of navigation; and
 - .2 identification of concerns raised on the legal issues.
 - the proposed new mandatory ship reporting system for the Western European Waters; and
 - .2 refrain from any discussions on the legal aspects of the proposals;
- .3 consider NAV 50/18 (Sweden) and the guidance in MSC/Circ.473 and provide any additional guidance/comments on the uniform application of Rule 1(e) of the COLREGs, as appropriate;
- .4 take into account the role of the human element guidance as updated at MSC 75 (MSC 75/24, paragraph 15.7) including the Human Element Analysing Process (HEAP) given in MSC/Circ.878/MEPC/Circ.346 in all aspects of the items considered; and
- .5 submit a report to Plenary on Thursday morning.

Report of the Ships' Routeing Working Group

3.29 Having received and considered the Working Group's report (NAV 50/WP.3), the Sub-Committee approved it in general and, in particular (with reference to paragraphs 10.1.1 to 10.1.21) took action as summarized hereunder:

- .1 approved the new traffic separation scheme "In the Approaches to the Cape Fear river", set out in annex 1, for adoption by the Committee (paragraph 3.2);

- .2 noted that the new mandatory reporting system proposed by Kuwait is not in accordance with the Guidelines and Criteria for Ship Reporting System and needed to be resubmitted to the next session; otherwise it could be implemented through Notices to Mariners (paragraph 3.4.4);
- .3 approved the new traffic separation schemes “Off Mina Al-Ahmadi”, set out in annex 1, for adoption by the Committee (paragraph 3.5);
- .4 approved the amendments to the traffic separation schemes “In Puget Sound and its approaches in Haro Strait, Boundary Pass and in the Strait of Georgia”, set out in annex 1 for adoption by the Committee (paragraph 4.2);
- .5 approved the amendments to the traffic separation scheme “In the approaches to Chesapeake Bay”, set out in annex 1, for adoption by the Committee (paragraph 4.4);
- .6 approved the amendments to the traffic separation schemes “Off Cape Roca” and “Off Cape S. Vicente”, set out in annex 1, for adoption by the Committee (paragraph 4.6);
- .7 approved the revoking of the traffic separation scheme “Off Berlenga” and invited the Committee to approve that decision (paragraph 4.8);
- .8 approved the amendments to the traffic separation scheme “In the approaches to Puerto San Martin”, set out in annex 1, for adoption by the Committee (paragraph 4.10);
- .9 approved the establishment of an area to be avoided and a mandatory no anchoring area in the West Cameron Area of the Gulf of Mexico, set out in annex 2, for adoption by the Committee (paragraph 5.2);
- .10 approved the amendments to the Notes for the existing “Deep-water route in the southern approach to Chesapeake Bay”, set out in annex 2, for adoption by the Committee (paragraph 5.4);
- .11 approved the establishment of an area to be avoided in the region of the Berlengas Islands, set out in annex 2, for adoption by the Committee (paragraph 5.6);
- .12 approved the amendments to the General Provisions on Ships Routeing, set out in annex 3, for adoption by the Committee and submission to the twenty-fourth session of the Assembly for confirmation (paragraph 7.2);
- .13 approved the amendments to the Guidelines and Criteria for Ship Reporting Systems, set out in annex 4, for adoption by the Committee (paragraph 7.3);
- .14 agreed that the proposed compulsory pilotage in the Torres Strait was operationally feasible and largely proportionate to provide protection to the marine environment (paragraph 8.1);
- .15 noted the opinion of a number of delegations that there was no clear legal basis to adopt a compulsory pilotage regime in international straits (paragraph 8.3);

- .16 invited MEPC 52 to refer the legal issue of compulsory pilotage in straits used for international navigation to LEG 89, in order to enable MSC 79 to consider the proposal with the issue of legal basis resolved (paragraph 8.3);
- .17 requested the Committee to consider whether there may be a need to develop guidelines and criteria for compulsory pilotage in straits used for international navigation notwithstanding the diverse view of delegations regarding a legal basis for such a regime (paragraph 8.4);
- .18 endorsed the establishment of a new mandatory Ship Reporting System in the Western European Waters PSSA, set out in annex 5, for adoption by the Committee (paragraph 8.5);
- .19 noted the information on the types of ships, which are recommended to use the SHIPPOS reporting service after the service was amended by resolution MSC.138(76) provided by Denmark (NAV 50/INF.4); and
- .20 noted the information on the work of Expert Working Groups (EWG) set up by the Maritime Group of the Helsinki Commission provided by Denmark, Germany and Sweden (NAV 50/INF.5).

Implementation of new and amended traffic separation schemes and other routeing measures

3.30 The new and amendments to the TSSs and other routeing measures mentioned in paragraphs 3.29.1 to 3.29.11 will be implemented at a date 6 months after the adoption by the Committee.

3.31 The Sub-Committee, when considering the report of the Working Group on operational feasibility and proportionality of the compulsory pilotage scheme (paragraph 3.29.14 above), recognized that the Working Group had not been instructed to and therefore had not considered the following:

- .1 whether the proposed measure is the only measure which can improve the safety of navigation in the area;
- .2 what other feasible associated protective measures can be implemented; and
- .3 effect of the implementation of other feasible measures in general and in comparison with the effect of the implementation of the proposed measure.

3.32 Some delegations were of the view that justification and the demonstration of the compelling need of the proposed measure had not been submitted to the Sub-Committee.

3.33 The Sub-Committee, when considering the report of the Working Group on the question of whether there may be a need to develop guidelines and criteria for compulsory pilotage in straits used for international navigation (paragraph 3.29.17 above), agreed to request the Committee to consider whether, for the purpose of enhancing safety of navigation in straits used for international navigation by means of compulsory pilotage, there may be a need for action (e.g. through establishing a new multilateral agreement or an amendment to any relevant instruments including guidelines and criteria) and decide as it deems appropriate.

3.34 The Secretariat was requested to report to MEPC 52 and MSC 79 of the outcome of discussion on the proposed associated protective measures for the Torres Straits PSSA and the Western European Waters PSSA as reflected in the above paragraphs.

3.35 In addition, with respect to the proposed associated protective measure for the Torres Strait PSSA, the Sub-Committee further requested the Secretariat to invite MEPC 52 to refer the legal aspects of compulsory pilotage in straits used for international navigation to LEG 89, in order to enable MSC 79 to consider the proposal with the issue of the legal basis resolved.

4 REQUIREMENTS FOR THE DISPLAY AND USE OF AIS INFORMATION ON SHIPBORNE NAVIGATIONAL DISPLAYS

4.1 The Sub-Committee briefly discussed documents by Germany (NAV 50/4), the co-ordinator of the Correspondence Group on the display and use of AIS information on shipborne navigational displays, IEC (NAV 50/4/1), the United Kingdom (NAV 50/4/2) including the relevant part of document NAV 50/4/3 (Germany, Norway, Poland, United Kingdom and the United States).

4.2 The Sub-Committee agreed to refer documents NAV 50/4, NAV 50/4/1, NAV 50/4/2 and NAV 50/4/3 to the Technical Working Group to be established under agenda items 4, 9, 10 and subitem 18 on AIS matters.

Establishing Technical Working Group

4.3 Having also considered agenda items 9, 10 and subitem 18 on AIS matters, which are deemed to be within the remit of the Technical Working Group, the Sub-Committee re-established the Technical Working Group and instructed it, taking into account any decisions of, and comments and proposals made in Plenary to consider all relevant documents submitted under agenda items 4, 9, 10 and the subitem 18 on AIS matters:

- .1 consider NAV 50/4 and finalize the following:
 - .1 draft Performance Standards for the Presentation of navigation-related information on shipborne navigational displays (NAV 50/4, paragraph 11.1, annex 1: agenda item 4);
 - .2 draft SN circular on Guidelines for the presentation of navigation-related symbols (NAV 50/4, paragraph 11.2, annex 2: agenda item 4); and
 - .3 draft SN circular on Guidelines for the presentation of navigation-related terms and abbreviations (NAV 50/4, paragraph 11.3, annex 3: agenda item 4).
- .2 consider NAV 50/4, paragraphs 12.1, 12.2, 12.3 and 12.4 and NAV 50/9, paragraph 22.4 and provide any comments and guidance on the following issues:
 - .1 that based on more practical experience gained with the onboard use of AIS and the draft performance standards being developed under .1, the Interim Guidelines for the Presentation and Display of AIS Target Information (SN/Circ.217) should be revoked;

- .2 the recommendations of the Correspondence Group (NAV 50/4, paragraphs 12.2, 12.3 and 12.4):
 - .1 for the development of guidelines for navigation-related definitions, to replace the definitions in the individual Performance Standards;
 - .2 for the development of guidelines for the management and presentation of navigation-related alarms and indications, to include prioritization for presentation;
 - .3 for a review of the performance standards for ECDIS as well as the reference standards in order to clarify operational requirements and introduce new requirements for ECDIS thereby also taking into account the relevant part of document NAV 50/4/3;
- .3 note NAV 50/4/1 and provide any comments on the fact that IEC is preparing a technical report outlining a technical solution, which would match work tasks to display requirements and set the technical basis for new display arrangements (agenda item 4);
- .4 consider NAV 50/4/2 and COMSAR 8/17 and provide any comments and guidance as to whether, in the light of experience gained with the installation and use of AIS, resolution A.917(22) as amended by resolution A.956(23) should be reviewed and SN/Circ.227 revised (agenda item 4 and the subitem 18 on AIS matters);
- .5 finalize the draft performance standards for radars, after considering NAV 50/9, NAV 50/9/1, NAV 50/9/2 and the relevant part of NAV 50/4/3;
- .6 consider NAV 50/9, paragraphs 22.3, 22.5, 22.6 and 22.7 and provide any comments and guidance on the following issues:
 - .1 the need for revision of regulation V/19 at the next routine opportunity to reflect the requirement for an automatic Target Tracking Aid on all radar equipment and the mandatory interfacing of AIS equipment to the radar;
 - .2 problems with spectrum restrictions or sharing spectrum with other users and strongly address the ITU in order to secure adequate bandwidth and give the shipborne radar priority if the spectrum is shared with other services;
 - .3 provision of appropriate ducting forecasts by the World Meteorological Organization;
 - .4 need for installation guidelines for shipborne radar and the addition of this item to the work programme for the NAV Sub-Committee;
- .7 prepare as appropriate, recommendations, opinions and liaison statements to appropriate ITU bodies in relation to NAV 50/10/1 (agenda item 10);

- .8 take into account the role of the human element guidance as updated at MSC 75 (MSC 75/24, paragraph 15.7) including the Human Element Analysing Process (HEAP) given in MSC/Circ.878/MEPC/Circ.346 in all aspects of the items considered;
- .9 consider whether there is a need for a requirement for the presentation of AIS information to the OOW (agenda item 4);
- .10 consider NAV 50/18/1 and develop a draft SN/Circular on Guidance for masters to use the UN/LOCODE in a standardized way in the AIS destination field for country and port information in AIS messages (subitem 18); and
- .11 submit a report to Plenary on Thursday morning.

Report of the Technical Working Group

4.4 Having received and considered the Technical Working Group's report (NAV 50/WP.6 and Add.1), the Sub-Committee (with reference to paragraphs 4.1 to 4.3 (NAV 50/WP.6) and paragraph 7.1 (NAV 50/WP.6/Add.1)) took action as summarized hereunder.

4.5 The Sub-Committee:

- .1 considered and approved the draft MSC resolution on Performance Standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays, as amended, set out in annex 6, for submission to MSC 79 with a view for adoption;
- .2 considered and endorsed the draft SN Circular on Guidelines for the presentation of navigation-related symbols, terms and abbreviations, set out in annex 7, for submission to MSC 79 for approval;
- .3 agreed that there was no need to revoke SN/Circ.217 applicable to the existing equipment displaying AIS information as SN/Circ.217 will be automatically revoked on the date of application of new performance standards for the presentation of navigation-related information on shipborne navigational displays; and
- .4 invited the Maritime Safety Committee to delete the agenda item "Requirements for display and use of AIS information on shipborne navigational displays" from the Sub-Committee's work programme, as the work had been completed.

5 REVIEW OF THE 2000 HSC CODE AND AMENDMENTS TO THE DSC CODE AND 1994 HSC CODE

5.1 The Sub-Committee considered document NAV 50/5 (Secretariat) concerning the essence of MSC/Circ.1057 (proposed amendments to update the DSC Code and the 1994 HSC Code) including an application of the Codes.

5.2 It was noted that the:

- .1 2000 HSC Code applies to HSC the keels of which are laid or which are at a similar stage of construction on or after 1 July 2002;
- .2 1994 HSC Code applies to HSC constructed on or after 1 January 1996 but before 1 July 2002;
- .3 DSC Code applies to DSC/HSC constructed before 1 January 1996; and
- .4 Chapter 13 – Shipborne navigational systems and equipment and voyage data recorders of the 2000 HSC Code is equivalent to SOLAS chapter V, as amended (up to and including resolution MSC.99(73)), which should be incorporated into the 1994 HSC Code and the DSC Code as indicated in MSC/Circ.1057.

5.3 Taking into account comments and proposals made during the discussion on the above issue, the Sub-Committee was of the opinion that SOLAS chapter V, as amended, should apply to all Codes and with a view to progressing the matter further, established a correspondence group under the co-ordination of Norway* to progress this work intersessionally and report to NAV 51. The task of the Correspondence Group would be to develop draft amendments on shipborne navigational systems and equipment, which should be incorporated into the 1994 HSC Code and the DSC Code as indicated in MSC/Circ.1057.

5.4 The Secretariat was instructed to convey this section of the report to DE 48.

6 ANCHORING, MOORING AND TOWING EQUIPMENT

6.1 The Sub-Committee noted that DE 47 (DE 47/WP.8) had agreed to the draft new SOLAS regulation on Anchoring, mooring and towing equipment (DE 47/25, annex 10), for submission to MSC 79 for approval with a view to adoption. DE 47 also requested NAV 50 to consider the proposed new SOLAS regulation and provide its comments to MSC 79. With regard to the draft SOLAS regulation on towing and mooring lines, DE 47, following an indicative vote, agreed not to pursue the matter further, being, in general, of the opinion that there was not sufficient justification of the need for such regulation.

6.2 The Sub-Committee considered the submissions by Australia (NAV 50/6) and IMPA, IHMA and IAPH (NAV 50/6/1) on the proposed new SOLAS regulation II-1/3-9 and the draft MSC circular on Guidelines for mooring and harbour towage lines.

*

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6.3 The Sub-Committee considered draft regulation II-1/3-8 on anchoring, towing and mooring equipment and was of the opinion that there was no need for the word "anchoring" in the title and paragraph 2 of the regulation and the footnote relating to regulation I/6 in paragraph 3 should ideally refer to an MSC Circular rather than an IACS Unified Requirement, which could change over time. The Sub-Committee also decided to inform the Committee that there was no need to include "anchoring" in regulation II-1/3-8.

6.4 The Sub-Committee further considered the proposed regulation II-1/3-9 on Ship's lines used for harbour towage and mooring to complement draft regulation II-1/3-8 and after an in-depth discussion concluded that there was no definitive support by Members for the proposed regulation.

6.5 The Sub-Committee also concluded that the draft MSC circular on Guidelines for Mooring and Harbour Towage lines as proposed by Australia (NAV 50/6, annex 2) was of too much of a technical nature to be considered by the Sub-Committee and invited Australia to submit the proposed MSC Circular to DE 48 for consideration, as part of the guidelines to be developed as referred to in draft regulation II-1/3-8.

6.6 The Sub-Committee further requested Members who saw merit in any additional operational guidance to consider submitting appropriate proposals to DE 48.

6.7 The Sub-Committee also recognized that DE 48 might again refer the outcome of its work on the guidelines to NAV 51 for comments.

6.8 Since work on the item had been completed, the Sub-Committee agreed to recommend to the Committee the deletion of the item from the work programme.

7 REVISION OF THE FISHING VESSEL SAFETY CODE AND VOLUNTARY GUIDELINES

7.1 The Sub-Committee noted that it had been instructed by MSC 77 to review and revise the final texts of the relevant chapters as detailed in NAV 48/19/Add.1 and forward a revised text to SLF 47. It also recalled the Secretary-General's opening remarks on the safety of Fishing Vessels.

7.2 The Sub-Committee briefly considered document NAV 48/19/Add.1 (Secretariat).

Establishment of a Drafting Group

7.3 The Sub-Committee established a Drafting Group to review relevant chapters of the draft revised Code and Voluntary Guidelines and instructed it:

- .1 to review and revise the navigational provisions of the draft Code and Guidelines set out in document NAV 48/19/Add.1 taking into account the outcome of MSC 77 including comments and decisions made in Plenary; and
- .2 submit a draft final text by Thursday for consideration at Plenary.

Report of the Drafting Group

7.4 Having received and considered the report of the Drafting Group (NAV 50/WP.7), the Sub-Committee approved it in general and, in particular (with reference to paragraphs 8.1 and 8.2 in NAV 50/WP.7) took action as summarized hereunder:

- .1 approved the draft revised text of chapter X of the Fishing Vessel Safety Code, as set out in annex 8, for transmission to the SLF Sub-Committee; and
- .2 approved the draft revised text of chapter 10 of the draft revised Voluntary Guidelines, as set out in annex 9, for transmission to the SLF Sub-Committee.

7.5 The Sub-Committee noted that no amendments had been made to the Preface/Preamble and the General Provisions of the draft revised fishing vessel safety Code and the voluntary Guidelines including the annexes detailed in document NAV 48/19/Add.1. The Sub-Committee further agreed that the annexes should be considered by SLF 47 for the inclusion in the special annex that would contain an annotated list of pertinent documents.

7.6 The Secretariat was instructed to convey this section of the report to SLF 47.

7.7 Since work on the item had been completed, the Sub-Committee agreed to recommend to the Committee the deletion of the item from the work programme.

8 RECOMMENDATIONS ON HIGH-RISK OCEANIC CROSSINGS BY ADVENTURE CRAFT

8.1 The Sub-Committee noted that Chile had presented a proposal (MSC 76/20/4) to MSC 76 calling for the development of guidelines on minimum safety requirements for high-risk ocean voyages by non-conventional adventure craft which, in the event of an emergency, potentially involves maritime search and rescue operations using various resources which are of high cost for the country and MRCCs involved, as well as for the ships and aircraft deployed. MSC 76 decided to include, in the work programmes of the NAV (co-ordinator) and COMSAR Sub-Committees, a low priority item on “Recommendations on high-risk oceanic crossings by adventure craft”, with one session needed to complete the item.

8.2 The Sub-Committee considered document MSC 76/20/4 (Chile) including the draft MSC circular on Measures to be considered during an oceanic crossing by adventure craft (MSC 76/20/4, annex).

8.3 The Sub-Committee further noted the additional information provided by Chile including a more comprehensive draft MSC circular on Guidance on the minimum safety measures of high-risk oceanic crossing by non-conventional adventure craft.

8.4 The Sub-Committee established a small Drafting Group to review and amend the Guidance, as appropriate.

8.5 The Sub-Committee considered the report of the Drafting Group on High-risk ocean crossings by adventure craft (NAV 50/WP.8) and, though a number of comments were made and agreed to the Sub-Committee, due to lack of time, was unable to finalize its work on the draft MSC Circular to be able to refer it to COMSAR 9 for its consideration. The Sub-Committee therefore invited the delegation of Chile to resubmit the draft MSC Circular on Guidance on the

Minimum Safety Measures for High-risk Oceanic Voyages by non-conventional craft to COMSAR 9, taking into account the comments and views expressed by the Sub-Committee. Several delegations showed their willingness to provide further comments to the delegation of Chile to assist it in the preparation of an appropriate submission to COMSAR 9.

8.6 The Secretariat was instructed to convey this section of the report to COMSAR 9.

8.7 Since work on the item had been completed, the Sub-Committee agreed to recommend to the Committee the deletion of the item from the work programme. However, the Sub-Committee was aware that COMSAR 9 may wish to refer the outcome of its work to NAV 51.

9 REVIEW OF PERFORMANCE STANDARDS FOR RADAR EQUIPMENT

9.1 The Sub-Committee briefly discussed documents by Norway (NAV 50/9), the co-ordinator of the Correspondence Group on radar performance standards CIRM (NAV 50/9/1), the United States (NAV 50/9/2) including the relevant part of NAV 50/4/3 (Germany, Norway, Poland, the United Kingdom and the United States).

9.2 The Sub-Committee agreed to refer the item to the Technical Working Group for consideration and comments, as appropriate.

Report of the Technical Working Group

9.3 Having received and considered the Technical Working Group's report (NAV 50/WP.6/Add.1 and Add.2), the Sub-Committee took action as summarized hereunder.

9.4 The Sub-Committee:

- .1 considered and approved the draft MSC resolution on Adoption of the revised performance standards for radar equipment, set out in annex 10, for submission to MSC 79 with a view for adoption;
- .2 agreed that there was a need for the development of the following guidelines on:
 - installation of shipborne radar equipment; and
 - navigation-related definitions, andinvited Members to submit appropriate proposals and related justifications to MSC 80 for the inclusion of these items in the work programme of the Sub-Committee;
- .3 instructed the Secretariat to communicate with the World Meteorological Organization and invite it to study meteorological conditions that give rise to anomalous propagation conditions which might affect radar performance through atmospheric ducting and comment on the matter as appropriate;
- .4 agreed to include the agenda item "Revision of the performance standards for INS and IBS" in the provisional agenda for NAV 51;

- .5 concurred with the Group's view that a review of regulation V/19:
 - .5.1 for automatic Target Tracking Aid on all radar equipment was not necessary due to such facility being included in new performance standards for radar equipment;
 - .5.2 to ensure mandatory interfacing of AIS to radar equipment would be a positive action but it would be applicable only to new ships built after 2008;
 - .5.3 to ensure mandatory interfacing of AIS to ECDIS when carried would be a positive action but it would be applicable only to new ships built after 2008; and
 - .5.4 to present AIS information to the OOW was needed but it would be applicable only to new ships built after 2008.
- .6 agreed to forward the proposed draft amendments to SOLAS regulation V/19, given in annex 11, with the above comments to MSC 79 for consideration and approval, with a view to adoption at MSC 80.

9.5 With respect to the remaining action points in the document by Norway (NAV 50/9, paragraphs 22.8 to 22.11), the Sub-Committee:

- .1 noted, that in any future revision of Performance Standards for Navigation Systems or Equipment or Integrated Systems, or in the development of new task based Performance Standards, it might be necessary to open this and other relevant standards, in order to clarify and to maintain compatibility across standards;
- .2 instructed the Secretariat to make the STW Sub-Committee aware of these revised Performance Standards so that it might review the content of the STCW Convention and relevant model courses;
- .3 instructed the Secretariat to make the COMSAR Sub-Committee aware of the restrictions on radar design imposed by the continued use of SARTs; and
- .4 instructed the Secretariat to inform IALA of the proposed changes to S-Band radar regarding RACONs.

9.6 Since work on the item had been completed, the Sub-Committee agreed to recommend to the Committee the deletion of the item from the work programme.

10 ITU MATTERS, INCLUDING RADIOCOMMUNICATIONS ITU-R STUDY GROUP 8 MATTERS

10.1 The Sub-Committee noted that the resolution MSC.140(76) had been considered, in principle, by ITU-R Study Group 8 pending further consideration at an appropriate future meeting of the ITU Working Party concerned. It was expected that ITU Working Party 8B would consider the issue in detail during its next meeting 25 November to 2 December 2003.

However, it was not discussed in detail because no further work on Recommendation ITU-RM.1371-1 had been reported.

10.2 The Sub-Committee briefly discussed and noted the documents by the Secretariat (NAV 50/10, NAV 50/10/1, NAV 50/10/2, NAV 50/10/3, NAV 50/10/4 and NAV 50/INF.7) and agreed to refer document NAV 50/10/1 (Secretariat) to the Technical Working Group for consideration and comments, as appropriate.

Report of the Technical Working Group

10.3 Having received and considered the Technical Working Group's report (NAV 50/WP.6/Add.2), the Sub-Committee (with reference to paragraphs 8.2 and 8.3) took action as summarized hereunder.

10.4 Noting the work in progress on preparing revised performance standards for radar equipment, the Sub-Committee approved the liaison statement to Working Party 8B, given in annex 12, for forwarding by the Secretariat to the ITU-R WP.8B meeting in September 2004.

10.5 Being aware that CIRM and IALA might have more information on the matter of interest to ITU-R, the Sub-Committee invited them to submit the appropriate information on radar protection criteria from unwanted interferences to WP.8B.

11 LARGE PASSENGER SHIP SAFETY: EFFECTIVE VOYAGE PLANNING FOR LARGE PASSENGER SHIPS

11.1 The Sub-Committee recalled that both at NAV 48 and NAV 49 in the absence of detailed proposals, it had not been possible to establish a Drafting Group and make progress.

11.2 The Sub-Committee noted that MSC 78 (MSC 78/WP.14, paragraph 30) instructed the Sub-Committee to finalize its review of the tasks set out in annex 4 to document MSC 75/WP.12 with a view to clearly identifying which tasks required further action by the Sub-Committee, which tasks needed no further action and provide appropriate explanatory text and target completion dates for the tasks requiring further consideration for submission to MSC 79.

11.3 The Sub-Committee briefly considered documents NAV 50/11 (IHO) and NAV 50/11/1 (Norway).

11.4 The Sub-Committee also noted that the Secretariat had prepared an advance Working Paper (NAV 50/WP.2) to facilitate the work for the review of the Sub-Committee's tasks for large passenger ship safety. As suggested by MSC 78, the format contained in annex 1 to document DE 47/WP.7 had been used as a guide.

Establishment of a Working Group

11.5 The Sub-Committee established a Working Group with a view to reviewing the Sub-Committee's tasks for large passenger ship safety and instructed it:

- .1 to review the progress of the Sub-Committee's tasks for large passenger ship safety, taking into account the outcome of MSC 75 (MSC 75/WP.12, annex 4), MSC 78 (MSC 78/WP.14) and the table outlined in NAV 50/WP.2 including comments and decisions made in Plenary; and

- .2 to prepare a draft final text by Thursday for consideration at Plenary.

Report of the Working Group

11.6 Having received and considered the Working Group's report (NAV 50/WP.4), the Sub-Committee approved it in general and, in particular (with reference to paragraph 23 in NAV 50/WP.4):

- .1 invited the STW Sub-Committee to note the group's discussion on matters related to the review of pilot and bridge team interface management and bridge team resources (paragraph 5);
- .2 endorsed the group's opinion that IHO should be invited to keep the Sub-Committee informed of their on-going work related to the quality and availability of hydrographic information for operation in remote areas (paragraph 6);
- .3 endorsed the work to be undertaken for the tasks assigned to the Sub-Committee on large passenger ship safety, set out in annex 13, for forwarding to MSC 79 (paragraphs 4 to 11);
- .4 noted the group's views regarding the FSA study submitted by Norway (paragraphs 12 to 21);
- .5 agreed to re-establish the Drafting Group on Large Passenger Ship Safety at the next session (paragraph 22); and
- .6 invited the Committee to extend the target completion date accordingly (paragraph 22).

11.7 In the absence of substantive and detailed proposals and in the light of slow progress, the Committee was invited to extend the target completion date of this agenda item to 2006 on the Sub-Committee's work programme.

11.8 The Sub-Committee also invited IHO to advise NAV 51 on the progress made and any specific actions that needed to be undertaken for the improvement of the surveying, cartographic and navigational coverage of remote areas including development of relevant guidelines/requirements, to ensure the safety of navigation.

11.9 Members were invited to provide their comments and relevant proposals to NAV 51 to finalize the issue.

12 MEASURES TO ENHANCE MARITIME SECURITY

12.1 The Sub-Committee noted that no substantive documents had been submitted to this session and also no specific task had been allocated to it by any relevant Sub-Committee. However, the Committee (MSC 78/26, paragraph 7.97) had also instructed the various sub-committees, under their existing work programme and agenda item on "Measures to enhance maritime security", to identify the various instruments under their responsibility, which may need to be reviewed and amended so as to include appropriate security-related provisions. In this respect, the sub-committees should bear in mind the functional requirements of the ISPS Code and in particular those relating to access control and handling of cargo. The sub-committees

should expand on the need to amend each of the instruments which they would be identifying; to prioritize the work they will be suggesting and to indicate, bearing in mind their other work load and priorities, the time (number of sessions) needed to amend each of the instruments.

12.2 The Sub-Committee considered document NAV 50/12 (Secretariat) identifying that the relevant instruments which were of concern to the Sub-Committee were SOLAS chapter V, the COLREGs, the International Code of Signals and the Standard Marine Communication Phrases.

12.3 The Sub-Committee was of the opinion that there was no need to amend any of the above mentioned instruments which were of concern to the Sub-Committee.

12.4 The Sub-Committee recognizing that with the new maritime security regime having just entered into force on 1 July 2004, some operational security issues might be referred to it for review and comments, agreed to keep this agenda item on its work programme, and further decided to recommend to the Committee for an extension of the target completion date to 2005.

13 WORLD-WIDE RADIONAVIGATION SYSTEM

13.1 The Sub-Committee noted that MSC 78 had considered document MSC 78/11/5 (European Commission) providing an update on the status of the GALILEO Program, outlining plans to propose GALILEO to the Organization as a component of the World-Wide Radionavigation System (WWRNS) and describing the development of the necessary receiver performance standards for GALILEO to be used by the maritime sector. MSC 78 had noted with interest the information provided by the European Commission and agreed to refer document MSC 78/11/5 to NAV 50 for consideration. Referring to paragraph 3.8.1 of document MSC 78/24/12, MSC 78, in the context of resolution A.953(23) – *World-Wide Radionavigation System*, requested the Sub-Committee to recognize future systems conforming with the requirements of the revised Report on the study of world-wide radionavigation system, annexed to the resolution.

13.2 The Sub-Committee considered documents submitted by the European Commission (NAV 50/13 and MSC 78/11/5) providing a preliminary assessment of the Galileo navigation service requirements; confirming that analyses performed so far in the GALILEO programme indicate that it meets all the requirements for oceanic, coastal, port approach and restricted waters operations (resolution A.915(22)); and including an update on the status of the GALILEO programme and an outline on plans to propose GALILEO to the Organization as a component of the World-Wide Radionavigation System (WWRNS).

13.3 The Sub-Committee recognizing the need to promote active discussion and finalization of the work in 2005, and to facilitate the incorporation of the mariners' views, established a correspondence group under the co-ordination of France* to progress this work intersessionally and report to NAV 51. The Sub-Committee also agreed that the following issues needed to be addressed by this group:

- .1 a review of the preliminary draft receiver performance standards for the GALILEO open service and the GALILEO Integrity service; and

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- .2 a review of the plans to propose GALILEO to the Organization as a component of the World-Wide Radionavigation System.

14 CASUALTY ANALYSIS

14.1 The Sub-Committee noted that FSI 11 (FSI 11/ WP.2.) had tasked all Sub-Committee's to co-ordinate with their respective Sub-Committee Chairmen to identify lessons learned about the various casualties as given in annex 2 of FSI 11/WP.2, so that the summary of casualty analyses could be put on the IMO web-site. The Secretariat in co-operation with the Chairman provided the necessary input with respect to collisions and grounding incidents and NAV 49 had taken note of the action taken by the Secretariat and the Chairman.

14.2 The Sub-Committee also noted the decision of MSC 78 that, following consideration of the proposal by STW 34 to delete the item on "Casualty analysis" from its work programme and to deal with the matter under the agenda item on "Any other business", MSC 77 had agreed to consider the matter at its seventy-eighth session taking into account the outcome of consideration, by the MSC Correspondence Group on FSA, of the application of the FSA methodology to the analysis of casualties. MSC 78, having noted the outcome of the aforementioned correspondence group, decided that the item on "Casualty analysis" should remain on the work programme of the sub-committees.

14.3 The Sub-Committee observed that at this session no specific action had been requested of it either by the FSI Sub-Committee or any other technical body of the Organization.

15 GUIDANCE ON EARLY ABANDONMENT FOR BULK CARRIERS

15.1 The Sub-Committee noted that MSC 78 had considered the draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers and noted that STW 35 had endorsed the draft circular but that NAV 49 had agreed to consider it further at NAV 50. Taking into account these developments, MSC 78 postponed consideration of the draft circular until MSC 79, after NAV 50 would have considered it, and instructed NAV 50 to submit the draft circular, as may be amended, directly to MSC 79 for approval.

15.2 The Sub-Committee reviewed, in general, the draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers (NAV 49/2/1, annex).

15.3 The Sub-Committee established a small informal Drafting Group to review and revise the draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers.

Report of the Drafting Group

15.4 Having received and considered the report of the Drafting Group (NAV 50/WP.9), the Sub-Committee approved it in general and, in particular (with reference to paragraph 2 in NAV 50/WP.9) endorsed the draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers, set out in annex 14.

15.5 The Secretariat was instructed to forward the MSC circular, as amended, directly to MSC 79, for approval.

15.6 Since work on the item had been completed, the Sub-Committee agreed to recommend to the Committee the deletion of the item from the work programme.

16 WORK PROGRAMME AND AGENDA FOR NAV 51

General

16.1 The Sub-Committee noted that at MSC 78, the Chairman, in addressing the Committee's method of work relating to the consideration of proposals for new work programme items, clarified that the objective of the Committee when discussing these proposals was to decide, based upon justification provided by Member Governments in accordance with the Guidelines on the organization and method of work, whether the new item should or should not be included in the Sub-Committee's work programme. A decision to include a new item in a sub-committee's work programme did not mean that the Committee agreed with the technical aspects of the proposal. If it was decided to include the item in a sub-committee's work programme, detailed consideration of the technical aspects of the proposal and the development of appropriate requirements and recommendations should be left to the sub-committee concerned.

Work Programme and agenda for NAV 51

16.2 Taking into account the progress made at this session and the provisions of the agenda management procedure contained in paragraphs 3.11 to 3.2.3 of the Guidelines and method of work (MSC/Circ.1099-MEPC/Circ.405), the Sub-Committee revised its work programme (NAV 50/WP.5), based on that approved by MSC 78 (NAV 50/2/2, annex 2), and invited the Committee to approve the revised work programme and provisional agenda for NAV 51 set out in annexes 15 and 16 respectively.

Draft updated Terms of Reference of the Sub-Committee

16.3 The Sub-Committee noted that, MSC 78 (MSC 78/26, paragraph 23.1), having noted the outcome of the Chairmen's Meeting (MSC 78/WP.9 and Corr.1) which covered:

- .1 the issue of new reporting procedures;
- .2 terms of reference of the Sub-Committees; and
- .3 requests from the news media to attend meetings of various IMO bodies,

referred, due to lack of time, these issues to MSC 79.

Arrangements for the next session

16.4 The Sub-Committee agreed to establish at its next session, the following Working Groups on:

- .1 Ships' Routeing;
- .2 Technical matters; and
- .3 Maritime Security.

Date of the next session

16.5 The Sub-Committee noted that the fifty-first session of the Sub-Committee had been tentatively scheduled to be held from 6 to 10 June 2005.

17 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2005

17.1 In accordance with rule 16 of the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Mr. K. Polderman (the Netherlands) as Chairman and Dr. V.I. Peresyphkin (Russian Federation) as Vice Chairman for 2005.

18 ANY OTHER BUSINESS**Interpretation of COLREG Rule 1(e)**

18.1 The Sub-Committee considered document NAV 50/18 (Sweden) on interpretation of COLREG Rule 1(e), which states that “when a vessel of special construction or purpose cannot comply fully with the provisions of any of these Rules with respect to number, position, range or arc of visibility of lights or shapes, as well as to the disposition and characteristics of sound-signalling appliances, such vessel shall comply with such other provisions in regard to number, position, range or arc of visibility of lights or shapes, as well as to the disposition and characteristics of sound-signalling appliances as her Government shall have determined to be the closest possible compliance with these Rules in respect of that vessel.” Sweden requested the Sub-Committee to decide whether there was a need for unified interpretation regarding the expression "of special construction" and a need for reporting exemptions to the Organization.

18.2 The Sub-Committee recalled that interpretations of the COLREGs had not been issued as the Rules themselves should be drafted in a clear and unambiguous manner to the extent that interpretations should not be necessary. However, the Maritime Safety Committee had in the past issued MSC/Circulars on Guidance for the uniform application of certain rules of the COLREGs. MSC/Circ.320 and 473 are of relevance. MSC/Circ.473 on Guidance for the uniform application of Rule 1(e) provides some guidance on this matter.

18.3 The Sub-Committee agreed, in general to refer the issue to its Ships' Routeing Working Group for consideration and action, as appropriate.

Report of the Ships' Routeing Working Group

18.4 Having received and considered the Ships' Routeing Working Group's report (NAV 50/WP.3), the Sub-Committee (with reference to paragraph 10.1.19) took action as summarized hereunder.

18.5 The Sub-Committee endorsed the draft MSC circular providing additional guidance for the uniform application of COLREG Rule 1(e), as set out in annex 17, and forwarded it to the Committee for approval (paragraph 9.2).

Use of the destination-field in AIS messages

18.6 The Sub-Committee considered the submission by Denmark, Finland, Norway and Sweden (NAV 50/18/1) regarding the use of the destination field in AIS messages, which may now be used “at masters discretion” according to the AIS Performance standard and proposing

the mandatory use of the UN/LOCODE in a standardized way in the AIS destination field, which would eliminate confusion and allow an automatic processing of the information.

18.7 The Sub-Committee noted that in the AIS performance standards (resolution MSC.74(69), annex 3), the data field for voyage related information contained a section on “Destination and ETA (at master’s discretion)”. This proposal would entail an amendment to either the performance standard or the AIS operational guidelines (resolution A.917). In both cases, the Committee's agreement was required before starting the amendment procedure.

18.8 The delegation of Sweden informed the Sub-Committee that they were not proposing any mandatory use of the destination field in AIS messages and would prefer the development of an SN/Circular providing Guidance on the matter, with a view to harmonizing the use of the UN/LOCODE for both the port of departure and the next port of call.

18.9 The Sub-Committee agreed to refer document NAV50/18/1 to the Technical Working Group for consideration and action, as appropriate.

Report of the Technical Working Group

18.10 Having received and considered the Technical Working Group's report (NAV 50/WP.6/Add.1), the Sub-Committee took action as summarized hereunder.

18.11 The Sub-Committee endorsed the draft SN Circular on Guidance on the use of UN/LOCODE in the destination field in AIS messages, as amended, set out in annex 18, for submission to MSC 79 for approval.

Safety measures for ships navigating in narrow waterways and/or areas of dense traffic

18.12 The Sub-Committee noted with interest the information provided by IALA (NAV 50/INF.3) on Safety measures for ships navigating in narrow waterways and/or areas of dense traffic.

18.13 The Sub-Committee also took note of the proposal by IALA for the convening of a joint IMO/IALA workshop or seminar on the matter and was of the opinion that IALA should communicate directly with the IMO Secretariat to consider the feasibility of holding such an event.

Pilot ladder safety

18.14 The Sub-Committee noted with interest the information provided by IMPA (NAV 50/INF.6) on the outcome of a Safety Campaign in October 2002, the purpose of which was to investigate and highlight the safety standards of pilot ladders and associated equipment.

Bridge design, equipment and arrangements

18.15 The Sub-Committee considered in general the outcome of MSC 78 and the submissions by MSC 78/11/3 (IACS) and the Republic of Korea (MSC 78/11/4).

18.16 The Sub-Committee noted that MSC 78 had agreed that there was no need to develop a new instrument to demonstrate compliance with SOLAS regulation V/15 and instructed NAV 50 to take the above into account when considering the documents MSC 78/11/3 (IACS) and MSC 78/11/4 (Republic of Korea).

18.17 The Sub-Committee was of the opinion that both the documents MSC 78/11/3 and MSC 78/11/4 were of some relevance to the new work programme item "Revision of the performance standards for INS and IBS".

18.18 The observer from IACS informed the Sub-Committee that the IACS Unified Interpretation 181 submitted as document MSC 78/11/3 was amended in co-operation with the delegation of the Republic of Korea to ensure that their concerns relating to MSC/Circ.982 expressed in their paper MSC 78/11/4, and the additional comments made during the plenary discussion, were fully covered. The Unified Interpretation was further reviewed in co-operation with the delegation of Germany to ensure that the UI covered all the applicable parts of MSC/Circ.982. This revised UI will be submitted to MSC 79 and NAV 51.

18.19 The Sub-Committee further noted that the item "Revision of the performance standards for INS and IBS" had already been put on its work programme and would also figure on its provisional agenda for NAV 51. The Sub-Committee, with a view to progressing the matter further intersessionally, established a correspondence group under the co-ordination of Germany* to progress this work and report to NAV 51.

18.20 The Correspondence Group was tasked to give preliminary consideration to the revision of the performance standards for INS and IBS thereby taking into account the relevant parts of MSC 78/11/3 and MSC 78/11/4, and also the outcome of MSC 78 on SOLAS V/15, along with the existing performance standards for INS and IBS, and advise the Sub-Committee in the context of agenda item "Revision of the performance standards for INS and IBS".

18.21 Members were invited to provide their comments and relevant proposals to NAV 51 to progress the issue.

Safety aspects of ballast water exchange

18.22 The Sub-Committee noted that MSC 78, having recalled, in this context, the proposal of MEPC 49 (document MSC 78/2/1, paragraph 3) to confirm the acceptability of transitory non-compliance with safety regulations when conducting ballast water exchange, agreed to instruct the NAV and SLF Sub-Committees to specify the permissible limits of transitory deviation for safety problem areas and to report to the Committee, so that it could consider the aforementioned proposal of MEPC 49 and take action as appropriate.

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18.23 The Sub-Committee also noted that with the information available presently it was only possible to consider the matter on a preliminary basis.

18.24 The delegation of the United Kingdom informed the Sub-Committee that it had submitted to MEPC 52 Guidelines that include precautionary advice to masters when undertaking ballast water exchange sequences that involve periods when the criteria for propeller immersion, minimum draft and or trim and bridge visibility cannot be met. The delegation of the United Kingdom also informed the Sub-Committee that they will be considering proposals to amend SOLAS regulation V/22 in the context of ballast water exchange.

18.25 The delegation of Brazil also informed the Sub-Committee that paragraphs 2.10 to 2.15 of the annex to MEPC/Circ.389 and MSC/Circ.1021 were relevant to ballast water exchange.

18.26 After an exchange of views, the Sub-Committee concluded that with the information available presently it was not possible to make progress.

Revision of the forms of nuclear ship safety certificates

18.27 The Sub-Committee noted that MSC 78 had considered documents MSC 78/24/13 and Add.1 and MSC 78/24/14 and Add.1 wherein the Russian Federation and the United Kingdom, referring to the respective item in the work programme of the DE, COMSAR and NAV Sub-Committees and its target completion date of 2005, proposed, with a view to expediting the development and the adoption of revised forms of nuclear ship safety certificates, to consider, also taking into account the comments made by COMSAR 8, and to approve the draft revised forms of certificates developed by the co-sponsors, as set out in the annex to the documents, for submission to MSC 79 for consideration with a view to adoption. In this context, they also suggested that the Committee instructs NAV 50 to consider the approved draft revised forms of certificates and provide its comments thereon to MSC 79.

18.28 The Sub-Committee reviewed the forms of nuclear ship safety certificates in document NAV 50/2/2, annex 1 of the annex and agreed that the appropriate amendments, namely the inclusion of Volume III of the IAMSAR Manual in the details of navigation systems and equipment, should be made to the Record of Equipment for the nuclear passenger ship safety certificate (Form PNUC) and the Record of Equipment for the nuclear cargo ship safety certificate (Form CNUC) and instructed the Secretariat to prepare such draft amendments for submission to MSC 79 for consideration with a view to adoption.

18.29 As instructed by the Sub-Committee, the Secretariat prepared draft amendments to the Record of Equipment for the nuclear passenger and cargo ship safety certificates, as given in annex 19. These were agreed by the Sub-Committee for approval by the Committee.

18.30 The Committee was further invited to delete the agenda item "Revision of the forms of nuclear ship safety certificates" from the Sub-Committee's work programme, as the work had been completed.

Evaluation of the use of ECDIS and ENC development

18.31 The Sub-Committee considered in general the outcome of MSC 78 and the submissions by Australia (MSC 78/24/3), Norway (MSC 78/24/17) and France (MSC 78/24/18).

18.32 The Sub-Committee noted that the item "Evaluation of the use of ECDIS and ENC development" had already been put on its work programme and would also figure on its provisional agenda for NAV 51.

18.33 During a preliminary exchange of views there was support, in general, for the principle behind the Australian proposal i.e. to encourage the use of ECDIS on a world-wide basis. At the same time, the concerns put forward by Norway and France were also recognized by most delegations.

18.34 The Sub-Committee recognized that a number of issues needed to be considered and discussed before any decision on a revision of the performance standards of ECDIS including the carriage and back-up requirements could be taken.

18.35 The Sub-Committee therefore established a correspondence group to be co-ordinated by Norway*. The Correspondence Group was tasked to give consideration to documents MSC 78/24/3, MSC 78/24/17 and MSC 78/24/18 and exchange preliminary views on the following subjects:

- .1 Conditions for possible introduction of ECDIS carriage requirements;
 - schedule for phase in;
 - ship types affected;
- .2 Possible authorization of use of ECDIS in RCDS mode without a requirement to carry an appropriate portfolio of paper charts;
- .3 Indication of acceptance of RNCs by individual coastal States based on the survey to be conducted by IHO as requested by NAV 50;
- .4 Definition of, and/or criteria for, the term "appropriate portfolio of paper charts";
 - when ECDIS is used in the RCDS mode;
 - as ECDIS back up;
- .5 Instruments required to monitor the promulgation of official digital charts and paper charts related to ECDIS operation, and provide this information to interested parties;
- .6 Consider possible implications for IMO instruments;

and submit a report of its deliberations to NAV 51.

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18.36 The Sub-Committee welcomed the offer from the observer of IHO to evaluate together with its members if, and to what extent, coastal waters are adequately covered by RNC in relation to safety of navigation. In addition, the Sub-Committee also decided to request IHO to evaluate the extent of world-wide ENC coverage. IHO was invited to present the outcome of the evaluation to NAV 51.

18.37 Members were invited to provide their comments and relevant proposals to NAV 51 to progress the issue.

AIS matters

SN/Circ.227 – Guidelines for the installation of a shipborne Automatic Identification System (AIS)

18.38 The Sub-Committee noted that COMSAR 8 had considered document COMSAR 8/17 (Australia, Chile, France, Japan, Spain, Sweden, the United States and IALA) pointing out problems regarding the installation and use of AISs and instructed the Technical Working Group to consider documents MSC 77/10/5 and COMSAR 8/17. In considering the relevant part of the Technical Working Group's report (COMSAR 8/WP.4 and COMSAR 8/WP.4/Add.1), COMSAR 8:

- .1 urged all Member Governments, manufacturers and users to pay careful attention to the installation and use of AIS, including coding, and draw their attention to the requirements of SN/Circ.227 when new AIS installations are carried out;
- .2 concurred with the view of the group that AIS should ideally be connected through an uninterruptible power supply (UPS) to the ship's power supply as defined in SOLAS chapter II-1;
- .3 invited the NAV Sub-Committee to note the view of the group that SN/Circ.227, concerning installation guidelines, needed further revision and that the need for UPS might be added to it;
- .4 invited the NAV Sub-Committee to consider COMSAR 8/17 and take appropriate action; and
- .5 invited the Committee to concur with the Sub-Committee's view on connection of AIS to the ship's power supply.

18.39 The Sub-Committee briefly considered document COMSAR 8/17 and agreed to refer it to the Technical Working Group for consideration and action, as appropriate.

Report of the Technical Working Group

18.40 Having received and considered the Technical Working Group's report (NAV 50/WP.6/Add.1), the Sub-Committee took action as summarized hereunder.

18.41 The Sub-Committee:

- .1 agreed that there was no immediate need to review SN/Circ.227 and resolution A.917(22), as amended;

- .2 urged Governments to stress the importance to shipowners and other parties concerned of correctly following the guidelines in SN/Circ.227 and correctly entering the basic ship data when installing the AIS; and
- .3 endorsed the SN/Circ.227/Add.1 containing the amendments to section 2.4 “Power supply”, set out in annex 20, for submission to MSC 79 for approval.

IACS unified interpretations

18.42 The Sub-Committee noted that, in order to expedite the consideration of the IACS unified interpretations being submitted to the Committee on a continuous basis, MSC 78 decided that, from now on, IACS should submit them directly and as appropriate to the sub-committees concerned. To this effect, MSC 78 agreed to retain, on a continuous basis, the item on “Consideration of IACS unified interpretations” in the work programmes of the BLG, DE, FP, FSI, NAV and SLF Sub-Committees, rather than assigning it a target completion date, and to **include it in the agenda** for their **next** respective **sessions**. MSC 78, with respect to document MSC 78/22/1, decided to refer the document to the DE, FP, FSI, NAV and SLF Sub-Committees, instructing them to review the interpretations annexed to the document, which fall within their purview and prepare appropriate interpretations for approval.

18.43 The Sub-Committee considered on a preliminary basis the proposal by IACS (MSC 78/22/1, annex 7) regarding the IACS unified interpretation SC139 relating to Navigation bridge visibility. The observer from IACS informed the Sub-Committee that some other IACS Unified Interpretations may also be submitted to NAV 51.

18.44 Members were invited to submit comments and detailed proposals on the matter for consideration at NAV 51.

Regional Marine Electronic Highway in the East Asian Seas

18.45 The Sub-Committee recalled that at NAV 47 and NAV 48, the Secretariat had updated the Sub-Committee on the key elements and expected outputs of the new project for the Development of a Regional Marine Electronic Highway (MEH) in the East Asian Seas including the progress made.

18.46 The Sub-Committee noted with interest that the major output of the regional Marine Electronic Highway PDF Block B project in the Straits of Malacca and Singapore, which commenced in March 2001, is the 4-year GEF/World Bank/IMO Demonstration Phase in Partnership with IHO, INTERTANKO and ICS (MEH Demonstration Project) proposal, which was endorsed by the GEF Council on 25 July 2003. The project proposal, which involves navigational and hydrography issues will be considered by the Board of Directors of the World Bank with a view to its approval for implementation in October/November 2004. A draft Memorandum of Understanding to implement the MEH Demonstration Project is being reviewed, finalized and was expected to be signed soon by Indonesia, Malaysia, Singapore, IMO, IHO, INTERTANKO and ICS.

New reporting procedure

18.47 In accordance with the decision of the Council at its ninety-second session, the Sub-Committee at this session used the new reporting procedure. However, a full trial, and therefore a full evaluation of the procedure, i.e. an assessment of its advantages and disadvantages, was hampered by a major computer-failure in the IMO Headquarters during the most of Thursday. Nevertheless, the Sub-Committee exchanged views with regard to the new reporting procedure and the following comments and proposals were made:

- .1 some delegations expressed satisfaction with the new arrangements and emphasized its advantages, and among those delegations that spoke there was general agreement that a more rational and concise reporting system was necessary and feasible. Advantages that were highlighted were the speedier processing of working documents in all the three working languages and the decision to post the working papers approved by plenary on the IMO website;
- .2 at the same time there was some general concern that too much was being lost by the new reporting system, i.e. that the reports no longer provide a sufficient historical perspective of decisions made, for future reference. Those that spoke also mentioned, amongst other things, the need for reporting in some detail the arguments used in discussions on agenda items proposals, the position of delegations with minority views including the information that would be necessary for the interpretation and implementation of decisions. Some delegations were of the opinion that ships' routing and reporting measures required a method of reporting that was different from that of other Sub-Committees; and
- .3 one delegation stated that although it preferred the new system, however, brief summaries of the debates in plenary should also be included in the final report.

18.48 The Sub-Committee reached no firm conclusions, but there was general agreement that the reports should keep what is found essential, that more lessons should be learned, and that more balance should be found between the need for conciseness and completeness.

18.49 Noting that the Committees would consider the new reporting procedure further, the Sub-Committee agreed to bring the above comments to the attention of the MSC and MEPC.

EXPRESSIONS OF APPRECIATION

18.50 The Sub-Committee further expressed appreciation to the following delegates who had recently relinquished their duties, retired or were transferred to other duties or were about to, for their invaluable contribution to its work and wished them a long and happy retirement or, as the case might be, every success in their new duties:

- Mr. François Escaffre (France) (on retirement);
- Captain Ingo Ehmer (Germany) (on retirement);
- Mr. Hyung-Taek Jung (Republic of Korea) (on return home);
- Captain Marcos Augusto Almeida (Brazil) (on return home);
- Captain Benito Pulido Fernandez (Venezuela) (on return home); and
- Captain Juan Carlos Oti Paituvi (Venezuela) (on return home).

19 ACTION REQUESTED OF THE COMMITTEE

19.1 The Committee, at its seventy-ninth session, is invited to:

- .1 in accordance with resolution A.858(20):
 - .1 adopt the proposed new traffic separation scheme, including associated routeing measures "In the Approaches to the Cape Fear river" (paragraph 3.29.1 and annex 1*);
 - .2 adopt the proposed new traffic separation schemes "Off Mina Al-Ahmadi" (paragraph 3.29.3 and annex 1);
 - .3 adopt the proposed amendments to the existing traffic separation scheme "In Puget Sound and its approaches in Haro Strait, Boundary Pass and in the Strait of Georgia" (paragraphs 3.29.4 and annex 1);
 - .4 adopt the proposed amendments to the existing traffic separation scheme "In the approaches to Chesapeake Bay" (paragraph 3.29.5 and annex 1);
 - .5 adopt the proposed amendments to the existing traffic separation scheme "Off Cape Roca" and "Off Cape S. Vicente" (paragraph 3.29.6 and annex 1);
 - .6 revoke the existing traffic separation scheme "Off Berlenga" (paragraph 3.29.7);
 - .7 adopt the proposed amendments to the existing traffic separation scheme "In the approaches to Puerto San Martin" (paragraph 3.29.8 and annex 1);
 - .8 adopt the proposed new area to be avoided and a mandatory no anchoring area in the West Cameron Area of the Gulf of Mexico (paragraph 3.29.9 and annex 2);
 - .9 adopt the proposed amendments to the Notes for the existing "Deep-water route in the southern approach to Chesapeake Bay" (paragraph 3.29.10 and annex 2); and
 - .10 adopt the proposed new area to be avoided in the region of the Berlengas Islands (paragraph 3.29.11 and annex 2).
- .2 adopt, in accordance with resolution A.572(14), as amended and subject to confirmation by the Assembly, the proposed amendments to the General provisions on Ships Routeing (paragraph 3.29.12 and annex 3);
- .3 adopt the proposed draft MSC resolution on amendments to the Guidelines and Criteria for Ship Reporting Systems (paragraph 3.29.13 and annex 4);

* All references are to paragraphs of, and annexes to, the report of NAV 50 (NAV 50/19).
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- .4 adopt, in accordance with resolution A.858 (20), the draft MSC resolution on proposed new mandatory Ship Reporting System in the Western European Waters PSSA (paragraph 3.29.18 and annex 5);
- .5 take into account the outcome of the Sub-Committee's consideration on the proposed compulsory pilotage in the Torres Strait and in particular that:
 - .1 the Sub-Committee agreed that the proposed compulsory pilotage in the Torres Strait was operationally feasible and largely proportionate to provide protection to the marine environment (paragraph 3.29.14);
 - .2 a number of delegations were of the opinion that there was no clear legal basis to adopt a compulsory pilotage regime in straits used for international navigation (paragraph 3.29.15); and
 - .3 MEPC 52 was invited to refer the legal issue of compulsory pilotage in straits used for international navigation to LEG 89, in order to enable MSC 79 to consider the proposal with the issue of legal basis resolved (paragraphs 3.29.16 and 3.35).
- .6 consider whether there might be a need to develop guidelines and criteria for compulsory pilotage in straits used for international navigation notwithstanding the diverse view of delegations regarding a legal basis for such a regime (paragraph 3.29.17);
- .7 adopt in accordance with resolution A.886(21), the proposed draft MSC resolution on Performance Standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays (paragraph 4.5.1 and annex 6);
- .8 approve the draft SN circular on Guidelines for the Presentation of Navigation-related symbols, terms and abbreviations (paragraphs 4.5.2 and 7.23 and annex 7);
- .9 agree that there was no need to revoke SN/Circ.217 applicable to the existing equipment displaying AIS information, as SN/Circ.217 will be automatically revoked on the date of application of new performance standards for the presentation of navigation-related information on shipborne navigational displays (paragraph 4.5.3);
- .10 endorse the action of the Sub-Committee in submitting the draft revised chapter X of the Fishing Vessel Safety Code and the draft revised chapter 10 of the draft revised Voluntary Guidelines to SLF 47 (paragraphs 7.4 to 7.6, annexes 8 and 9);
- .11 adopt in accordance with resolution A.886(21), the proposed draft MSC resolution on Adoption of the revised performance standards for radar equipment (paragraph 9.4.1 and annex 10);
- .12 approve the proposed amendments to SOLAS regulation V/19 with a view to adoption at MSC 80 (paragraph 9.4.6 and annex 11);
- .13 endorse the action of the Sub-Committee in submitting a liaison statement to ITU-R Working Party 8B (paragraph 10.4 and annex 12);

- .14 endorse the work to be undertaken for the tasks assigned to the Sub-Committee on large passenger ship safety (paragraph 11.6.3 and annex 13);
- .15 approve the draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers (paragraph 15.5 and annex 14);
- .16 approve the draft MSC circular on Additional Guidance for uniform application of COLREG Rule 1(e) of the International Regulations for Preventing Collisions at Sea, 1972, as amended (paragraph 18.5 and annex 17);
- .17 approve the draft SN circular on Guidance on the use of UN/LOCODE in the destination field in AIS messages (paragraph 18.11 and annex 18);
- .18 approve the draft amendments to the Record of Equipment for the nuclear ship safety certificates (paragraph 18.29 and annex 19);
- .19 approve the draft SN circular on Guidelines for the installation of a shipborne automatic identification system (AIS) (paragraph 18.41.3 and annex 20);
- .20 note the outcome of the discussion by the Sub-Committee on the new reporting procedure (paragraphs 18.47 to 18.49); and
- .21 approve the report in general.

19.2 In reviewing the work programme of the Sub-Committee, the Committee is invited to consider the revised work programme suggested by the Sub-Committee (annex 15) in general and, in particular, to:

- .1 delete “Requirements for display and use of AIS information on shipborne navigational displays” as the task has been completed (paragraph 4.5.4);
- .2 delete “Anchoring, mooring and towing equipment” as the task has been completed (paragraph 6.8);
- .3 delete “Revision of the fishing vessel safety code and voluntary guidelines” as the task has been completed (paragraph 7.7);
- .4 delete “Recommendations on high-risk oceanic crossings by adventure craft” as the task has been completed (paragraph 8.7);
- .5 delete “Review of performance standards for radar equipment” as the task has been completed (paragraph 9.6);
- .6 delete “Guidance on early abandonment of bulk carriers” as the task has been completed (paragraph 15.6); and
- .7 extend the target completion date of the following work programme item, namely:
 - .1 “Large passenger ship safety: effective voyage planning for large passenger ships” with a target completion date of 2006 (paragraph 11.7).

19.3 The Committee is also invited to approve the proposed agenda for the Sub-Committee's fifty-first session (annex 16), which has been developed using the agenda management procedure.

ANNEX 1

NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

IN THE APPROACHES TO THE CAPE FEAR RIVER

(Reference charts: United States 11536, 2003 edition; 11537, 2004 edition.

Note: These charts are based on North American 1983 Datum.)

Description of the traffic separation scheme

(a) A traffic separation zone is bounded by a line connecting the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (1) | 33° 44'.70 N | 078° 04'.90 W |
| (2) | 33° 32'.75 N | 078° 09'.66 W |
| (3) | 33° 34'.50 N | 078° 14'.70 W |
| (4) | 33° 44'.98 N | 078° 05'.10 W |

(b) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographic positions:

- | | | |
|-----|--------------|---------------|
| (5) | 33° 32'.75 N | 078° 05'.99 W |
| (6) | 33° 44'.22 N | 078° 03'.80 W |

(c) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographic positions:

- | | | |
|-----|--------------|---------------|
| (7) | 33° 36'.22 N | 078° 17'.30 W |
| (8) | 33° 45'.88 N | 078° 05'.60 W |

Precautionary area

(a) A precautionary area is established bounded by a line connecting the following geographical positions: from

- | | | |
|------|--------------|--------------------------------------------------------------------------|
| (9) | 33° 47'.65 N | 078° 04'.78 W to |
| (10) | 33° 48'.50 N | 078° 04'.27 W to |
| (11) | 33° 49'.53 N | 078° 03'.10 W to |
| (12) | 33° 48'.00 N | 078° 01'.00 W to |
| (13) | 33° 41'.00 N | 078° 01'.00 W to |
| (14) | 33° 41'.00 N | 078° 04'.07 W to |
| (15) | 33° 44'.25 N | 078° 03'.00 W thence by an arc of 2 nautical miles radius,
centred at |
| (16) | 33° 46'.20 N | 078° 03'.00 W thence to the point of origin at (9). |

Note: A pilot boarding area is located inside the precautionary area. Due to heavy ship traffic, mariners are advised not to anchor or linger in the precautionary area except to pick up or disembark a pilot.

OFF MINA AL-AHMADI

Description of the traffic separation scheme

(Reference charts: British Admiralty Chart Nos.: 3773 Edition No.4 dated 06/12/2001 and 1223 Edition No.4 dated 16/5/2002)

Note: All positions are in degrees, minutes and decimals of minutes and are referred to World Geodetic System 1984 datum (WGS 84)).

Traffic Separation Schemes

North Scheme I

1. A separation zone for the North scheme No.1 bounded by a line joining the following geographical positions:

(1)	29° 03'.40 N	048° 45'.00 E
(2)	29° 05'.85 N	048° 30'.00 E
(3)	29° 06'.97 N	048° 27'.57 E
(4)	29° 05'.80 N	048° 26'.00 E
(5)	29° 03'.35 N	048° 28'.10 E
(6)	29° 03'.40 N	048° 34'.50 E
(7)	29° 01'.40 N	048° 45'.00 E

2. A traffic line for inbound traffic is established between the separation zones (in 1) and between the line joining the following geographical positions:

(8)	29° 04'.50 N	048° 45'.00 E
(9)	29° 06'.85 N	048° 30'.00 E
(10)	29° 07'.60 N	048° 28'.40 E

The established direction of in bound traffic flow is: 280° – 300° respectively.

3. A traffic line for outbound traffic is established between the separation zones (in 1) and between the line joining the following geographical positions:

(11)	29° 05'.20 N	048° 25'.10 E
(12)	29° 02'.40 N	048° 27'.80 E
(13)	29° 02'.55 N	048° 34'.50 E
(14)	29° 00'.50 N	048° 45'.00 E

The established direction of out bound traffic flow is: 143° – 089° -104° respectively.

North Scheme II

1. A separation zone for the North scheme No.II bounded by a line joining the following geographical positions:

(15)	29° 08'.00 N	048° 25'.60 E
(16)	29° 07'.40 N	048° 24'.80 E
(17)	29° 09'.20 N	048° 23'.00 E
2. A separation line joining the co-ordinates of (17) above to the following geographical position:

(18)	29° 12'.30 N	048° 15'.00 E
------	--------------	---------------
3. A traffic lane for inbound traffic is established between the separation zones (in 1) and separation line (in 2) and between the line joining the following geographical positions:

(19)	29° 08'.40 N	048° 26'.62 E
(20)	29° 10'.05 N	048° 23'.40 E
(21)	29° 13'.20 N	048° 15'.00 E

The established direction of inbound traffic flow is: 300° - 294° respectively.
4. A traffic lane for outbound traffic is established between the separation zones (in 1) and separation line (in 2) and between the line joining the following geographical positions:

(22)	29° 11'.45 N	048° 15'.00 E
(23)	29° 08'.70 N	048° 22'.60 E
(24)	29° 06'.90 N	048° 23'.90 E

The established direction of in bound traffic flow is: 114° - 143° respectively.
5. A junction buoy “A” will be laid in position (17) above:

(17)	29° 09'.20 N	048° 23'.00 E
------	--------------	---------------

special mark yellow.
6. A first precautionary area joining the following geographical positions:

(21)	29° 13'.20 N	048° 15'.00 E
(22)	29° 11'.45 N	048° 15'.00 E
(25)	29° 11'.45 N	048° 11'.60 E
(26)	29° 15'.00 N	048° 09'.60 E
(27)	29° 15'.00 N	048° 13'.40 E
7. A second precautionary area joining the following geographical positions:

(10)	29° 10'.05 N	048° 23'.38 E
(11)	29° 05'.20 N	048° 25'.10 E
(24)	29° 06'.90 N	048° 23'.90 E
(19)	29° 08'.40 N	048° 26'.62 E

8. Mina Al-Ahmadi deep departure channel still valid and in use for deep draft departing tankers.
9. Mina Al-Ahmadi restricted area will be re-designated through Notices To Mariners (NTM) to accommodate the above mentioned outbound lane upon the adoption of the scheme.

The South Scheme

1. A separation zone for the South scheme bounded by a line joining the following geographical positions:

(28)	28° 57'.70 N	048° 26'.95 E
(39)	28° 57'.00 N	048° 26'.00 E
(30)	29° 00'.40 N	048° 22'.96 E

2. A separation line joining the co-ordinates of position (30) above to the following geographical position:

(31)	29° 02'.60 N	048° 17'.65 E
------	--------------	---------------

3. A traffic lane for inbound traffic is established between the separation zone (in 1) and the separation line (in 2) and between the line joining the following geographical positions:

(32)	28° 58'.40 N	048° 27'.60 E
(33)	29° 01'.15 N	048° 23'.50 E
(34)	29° 03'.30 N	048° 18'.40 E

The established direction of inbound traffic flow is: 307° - 293° respectively.

4. A traffic lane for outbound traffic is established between the separation zone (in 1) and the separation line (in 2) and between the line joining the following geographical positions:

(35)	29° 01'.90 N	048° 17'.00 E
(36)	28° 59'.65 N	048° 22'.00 E
(37)	28° 56'.30 N	048° 25'.10 E

The established direction of outbound traffic flow is: 113° - 142° respectively.

5. A junction buoy (B) will be laid in position (30) above:

(30) (29° 00'.40 N, 048° 22'.96 E) – special mark yellow.

IN HARO STRAIT AND BOUNDARY PASS, AND IN THE STRAIT OF GEORGIA

(Reference charts: Canadian Hydrographic Service 3461, 2002 edition; 3462, 2002 edition; 3463, 2002 edition. United States 18421, 2003 edition; 18423, 2003 edition; 18431, 2002 edition; 18432, 2003 edition; 18433, 2002 edition.

Note: The charts are based on North America 1983 Datum.)

Description of the traffic separation scheme

The traffic separation schemes “In Haro Strait and Boundary Pass” and “In the Strait of Georgia” consists of a series of traffic separation schemes, two-way route, and precautionary areas broken into two geographic designations as follows:

- Part I: Haro Strait and Boundary Pass, (New)
Part II: Strait of Georgia, (Amended)

Part I

Haro Strait and Boundary Pass

(a) A separation zone is established bounded by a line connecting the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (1) | 48° 22'.25 N | 123° 21'.12 W |
| (2) | 48° 22'.25 N | 123° 17'.95 W |
| (3) | 48° 23'.88 N | 123° 13'.18 W |
| (4) | 48° 24'.30 N | 123° 13'.00 W |
| (5) | 48° 22'.55 N | 123° 18'.05 W |
| (6) | 48° 22'.55 N | 123° 21'.12 W |

thence back to point of origin (1).

(b) A traffic lane for eastbound traffic is established between the separation zone and a line connecting the following geographical positions:

- | | | |
|------|--------------|---------------|
| (12) | 48° 21'.67 N | 123° 21'.12 W |
| (13) | 48° 21'.67 N | 123° 17'.70 W |
| (14) | 48° 23'.10 N | 123° 13'.50 W |

(c) A traffic lane for westbound traffic is established between the separation zone and a line connecting the following geographical positions:

- | | | |
|------|--------------|---------------|
| (19) | 48° 25'.10 N | 123° 12'.67 W |
| (20) | 48° 23'.15 N | 123° 18'.30 W |
| (21) | 48° 23'.15 N | 123° 21'.12 W |

(d) A precautionary area “V”, is established bounded by a line connecting the following geographical points:

(21)	48° 23'.15 N	123° 21'.12 W
(22)	48° 23'.71 N	123° 23'.88 W
(23)	48° 21'.83 N	123° 25'.56 W
(24)	48° 21'.15 N	123° 24'.83 W
(25)	48° 20'.93 N	123° 24'.26 W
(26)	48° 20'.93 N	123° 23'.22 W
(12)	48° 21'.67 N	123° 21'.12 W

thence back to point of origin (21).

(e) A separation zone is established bounded by a line connecting the following geographical positions:

(7)	48° 25'.96 N	123° 10'.65 W
(8)	48° 27'.16 N	123° 10'.25 W
(9)	48° 28'.77 N	123° 10'.84 W
(10)	48° 29'.10 N	123° 11'.59 W
(11)	48° 25'.69 N	123° 11'.28 W

thence back to point of origin (7).

(f) A traffic lane for north-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(16)	48° 26'.57 N	123° 09'.22 W
(17)	48° 27'.86 N	123° 08'.81 W

(g) A traffic lane for south-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(18)	48° 29'.80 N	123° 13'.15 W
(19)	48° 25'.10 N	123° 12'.67 W

(h) A precautionary area “DI” is established bounded by a line connecting the following geographical points:

(14)	48° 23'.10 N	123° 13'.50 W
(15)	48° 24'.30 N	123° 09'.95 W
(16)	48° 26'.57 N	123° 09'.22 W
(19)	48° 25'.10 N	123° 12'.67 W

thence back to point of origin (14).

(i) A two-way route is established between the following geographical positions:

(29)	48° 31'.60 N	123° 10'.65 W
(30)	48° 35'.21 N	123° 12'.61 W
(31)	48° 38'.37 N	123° 12'.36 W

(32)	48° 39'.32 N	123° 13'.14 W
(33)	48° 39'.41 N	123° 16'.06 W
(34)	48° 32'.83 N	123° 13'.45 W

thence back to point of origin (29).

(j) A precautionary area “HS”, is established bounded by a line connecting the following geographical points:

(17)	48° 27'.86 N	123° 08'.81 W
(27)	48° 29'.28 N	123° 08'.35 W
(28)	48° 30'.55 N	123° 10'.12 W
(29)	48° 31'.60 N	123° 10'.65 W
(34)	48° 32'.83 N	123° 13'.45 W
(18)	48° 29'.80 N	123° 13'.15 W

thence back to point of origin (17).

(k) A two-way route is established between the following geographical positions:

(35)	48° 42'.23 N	123° 11'.35 W
(36)	48° 45'.51 N	123° 01'.82 W
(37)	48° 47'.78 N	122° 59'.12 W
(38)	48° 48'.19 N	123° 00'.84 W
(39)	48° 46'.43 N	123° 03'.12 W
(40)	48° 43'.80 N	123° 10'.77 W

thence back to point of origin (35).

(l) A precautionary area “TP”, is established bounded by a line connecting the following geographical positions:

(43)	48° 41'.06 N	123° 11'.04 W
(35)	48° 42'.23 N	123° 11'.35 W
(40)	48° 43'.80 N	123° 10'.77 W
(41)	48° 43'.20 N	123° 16'.06 W
(33)	48° 9'.41 N	123° 16'.06 W
(32)	48° 39'.32 N	123° 13'.14 W
(42)	48° 39'.76 N	123° 11'.84 W

Part II

Strait of Georgia

In the Strait of Georgia there are two TSS's and two Precautionary Areas that are currently adopted by IMO. This amendment affects the six geographical positions (55) through (60) used to describe the TSS west of Deltaport and the precautionary area “PR”.

(a) Precautionary area “PR”, is amended by changing the following highlighted geographical points:

(53)	48° 55'.34 N	123° 12'.30 W
(54)	48° 57'.68 N	123° 08'.76 W
(55)	49° 02'.20 N	123° 16'.28 W
(56)	49° 00'.00 N	123° 19'.69 W

thence back to point of origin (53).

(b) A separation zone is established bounded by a line connecting the following geographical positions:

(57)	49° 01'.39 N	123° 17'.53 W
(58)	49° 03'.84 N	123° 21'.30 W
(59)	49° 03'.24 N	123° 22'.41 W
(60)	49° 00'.75 N	123° 18'.52 W

thence back to point of origin (57).

(c) A traffic lane for north-westbound traffic is established between the separation zone and a line connecting the following geographical positions:

(55)	49° 02'.20 N	123° 16'.28 W
(62)	49° 04'.52 N	123° 20'.04 W

(d) A traffic lane for south-eastbound traffic is established between the separation zone and a line connecting the following geographical positions:

(61)	49° 02'.51 N	123° 23'.76 W
(56)	49° 00'.00 N	123° 19'.69 W

AMENDMENTS TO TRAFFIC SEPARATION SCHEME IN PUGET SOUND AND ITS APPROACHES

(Reference charts: Canadian Hydrographic Service 3461, 2002 edition; 3462, 2002 edition; United States 18421, 2003 edition; 18429, 2002 edition; 18430, 2003 edition; 18440, 2003 edition.

Note: These charts are based on North American 1983 Datum.)

Description of the traffic separation scheme

The traffic separation scheme “In Puget Sound and its approaches” consists of a series of traffic separation schemes and precautionary areas broken into three geographic designations as follows:

Part I:	Rosario Strait
Part II:	Approaches to Puget Sound
Part III:	Puget Sound

Parts I and III remain unchanged.

Part II: Approaches to Puget Sound

The traffic separation scheme in the approaches to Puget Sound consists of a north-east/south-west approach, a north-west/south-east approach, a north/south approach and an east/west approach connecting with precautionary areas.

North-west/south-east approach

(a) A separation zone is bounded by a line connecting the following geographical positions:

(55)	48° 28'.72 N	123° 08'.53 W
(56)	48° 25'.43 N	123° 03'.88 W
(57)	48° 22'.88 N	123° 00'.82 W
(58)	48° 20'.93 N	122° 59'.30 W
(59)	48° 20'.82 N	122° 59'.62 W
(60)	48° 22'.72 N	123° 01'.12 W
(61)	48° 25'.32 N	123° 04'.30 W
(62)	48° 28'.39 N	123° 08'.64 W

connecting with precautionary area “RA”, and thence to:

(63)	48° 18'.83 N	122° 57'.48 W
(64)	48° 13'.15 N	122° 51'.33 W
(65)	48° 13'.00 N	122° 51'.62 W
(66)	48° 18'.70 N	122° 57'.77 W

(b) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(67)	48° 29'.28 N	123° 08'.35 W
(68)	48° 25'.60 N	123° 03'.13 W
(69)	48° 23'.20 N	123° 00'.20 W
(70)	48° 21'.00 N	122° 58'.50 W

connecting with precautionary area “RA”, and thence to:

(71)	48°19'.20 N	122°57'.03 W
(72)	48°13'.35 N	122°50'.63 W

(c) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(73)	48° 27'.86 N	123° 08'.81 W
(74)	48° 25'.17 N	123° 04'.98 W
(75)	48° 22'.48 N	123° 01'.73 W
(76)	48° 20'.47 N	123° 00'.20 W

connecting with precautionary area “RA”, and thence to:

- | | | |
|------|--------------|---------------|
| (77) | 48° 18'.52 N | 122° 58'.50 W |
| (78) | 48° 12'.63 N | 122° 52'.15 W |

(d) Connecting with precautionary area “SA”, the waters contained within a circle of radius 2 miles centred at geographical position 48° 11'.45 N, 122°49'.78 W.

AMENDMENTS TO TRAFFIC SEPARATION SCHEME IN THE APPROACHES TO CHESAPEAKE BAY

(Reference charts: United States 12200, 2002 edition; 12207, 1998 edition; 12221, 2003 edition.

Note: These charts are based on North American 1983 Datum.)

Description of the traffic separation scheme

The traffic separation scheme “In the Approaches to Chesapeake Bay” consists of three parts:

Part I

Precautionary area

(a) A precautionary area of radius two miles is centred upon geographical position 36° 56'.13 N, 075° 57'.45 W.

Part II

Eastern approach

(a) A separation line connects the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (1) | 36° 57'.50 N | 075° 48'.21 W |
| (2) | 36° 56'.40 N | 075° 52'.40 W |
| (3) | 36° 56'.40 N | 075° 54'.95 W |

(b) A traffic lane for westbound traffic is established between the separation line and a line connecting the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (4) | 36° 57'.94 N | 075° 48'.41 W |
| (5) | 36° 56'.90 N | 075° 52'.40 W |
| (6) | 36° 56'.90 N | 075° 55'.14 W |

(c) A traffic lane for eastbound traffic is established between the separation line and a line connecting the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (7) | 36° 57'.04 N | 075° 48'.01 W |
| (8) | 36° 55'.88 N | 075° 52'.40 W |
| (9) | 36° 55'.88 N | 075° 54'.95 W |

Part III

Southern approach

(a) A separation line connects the following geographical positions:

(10)	36° 50'.33 N	075° 46'.29 W
(11)	36° 52'.90 N	075° 51'.52 W
(12)	36° 55'.96 N	075° 54'.97 W

(b) A separation line connects the following geographical positions:

(13)	36° 55'.11 N	075° 55'.23 W
(14)	36° 52'.35 N	075° 52'.12 W
(15)	36° 49'.70 N	075° 46'.80 W

(c) A separation line connects the following geographical positions:

(16)	36° 49'.52 N	075° 46'.94 W
(17)	36° 52'.18 N	075° 52'.29 W
(18)	36° 54'.97 N	075° 55'.43 W

(d) A separation line connects the following geographical positions:

(19)	36° 54'.44 N	075° 56'.09 W
(20)	36° 51'.59 N	075° 52'.92 W
(21)	36° 48'.87 N	075° 47'.42 W

(e) A traffic lane for inbound traffic is established between the separation lines described in paragraphs (a) and (b).

(f) A traffic lane for outbound traffic is established between the separation lines described in paragraphs (c) and (d).

(g) A deep-water route is established between the separation lines described in paragraphs (b) and (c). The types of ships which are recommended to use the deep-water route are given in the description of the deep-water route (see Part C). All other ships using the southern approach traffic separation scheme should use the appropriate inbound or outbound traffic lane.

AMENDMENTS TO THE TRAFFIC SEPARATION SCHEME “OFF CAPE ROCA”

(Reference chart: "Cabo Finisterra a Casablanca", Number 21101, (INT 1081) Catalogue of Nautical Charts of the Portuguese Hydrographic Office, 4th impression - April 2002.

Note: This chart is based on European Datum 50.)

Description of the amended traffic separation scheme:

(a) A separation zone bounded by lines connecting the following geographical positions:

(1)	38° 38'.61 N	009° 46'.52 W
(2)	38° 43'.43 N	009° 47'.95 W
(3)	38° 51'.99 N	009° 47'.95 W
(4)	38° 51'.99 N	009° 49'.40 W
(5)	38° 43'.28 N	009° 49'.40 W
(6)	38° 38'.35 N	009° 47'.94 W

(b) A northbound traffic lane between the separation zone described in (a) and a separation zone bounded by lines connecting the following geographical positions, for ships not carrying dangerous or pollutant cargoes in bulk:

(7)	38° 37'.64 N	009° 51'.78 W
(8)	38° 42'.93 N	009° 53'.35 W
(9)	38° 51'.99 N	009° 53'.35 W
(10)	38° 51'.99 N	009° 54'.80 W
(11)	38° 42'.79 N	009° 54'.80 W
(12)	38° 37'.38 N	009° 53'.20 W

(c) A northbound traffic lane between the separation zones described in (b) and a central separation zone bounded by lines connecting the following geographical positions, for ships carrying dangerous or pollutant cargoes in bulk:

(13)	38° 36'.63 N	009° 57'.29 W
(14)	38° 42'.39 N	009° 59'.00 W
(15)	38° 51'.99 N	009° 59'.00 W
(16)	38° 51'.99 N	010° 04'.25 W
(17)	38° 41'.91 N	010° 04'.25 W
(18)	38° 35'.69 N	010° 02'.41 W

(d) A southbound traffic lane between the separation zones described in (c) and a separation zone bounded by lines connecting the following geographical positions, for ships not carrying dangerous or pollutant cargoes in bulk:

(19)	38° 34'.96 N	010° 06'.35 W
(20)	38° 41'.56 N	010° 08'.30 W
(21)	38° 51'.99 N	010° 08'.30 W
(22)	38° 51'.99 N	010° 09'.75 W
(23)	38° 41'.40 N	010° 09'.75 W
(24)	38° 34'.70 N	010° 07'.76 W

(e) A southbound traffic lane between the separation zones described in (d) and a line connecting the following geographical positions, for ships carrying dangerous or pollutant cargoes in bulk:

(25)	38° 34'.00 N	010° 11'.61 W
(26)	38° 41'.04 N	010° 13'.69 W
(27)	38° 51'.99 N	010° 13'.70 W

(f) The area between the separation zone described in paragraph (a) and the Portuguese coast, bounded on the north by the parallel of 38° 51'.99 N and on the south by the line connecting point with position 38° 38'.61 N 010° 13'.48 W and Cape Raso lighthouse (38° 38'.61 N 010° 13'.48 W) is designated as an inshore traffic zone.

AMENDMENTS TO THE TRAFFIC SEPARATION SCHEME “OFF CAPE S. VICENTE”

(Reference chart: "Cabo Finisterra a Casablanca", Number 21101, (INT 1081) Catalogue of Nautical Charts of the Portuguese Hydrographic Office, 4th impression - April 2002.

Note: This chart is based on European Datum 50.)

Description of the amended traffic separation scheme:

(a) A separation zone bounded by lines connecting the following geographical positions:

(1)	36° 45'.16 N	008° 58'.93 W
(2)	36° 47'.10 N	009° 07'.54 W
(3)	36° 54'.44 N	009° 16'.05 W
(4)	37° 01'.40 N	009° 18'.07 W
(5)	37° 01'.14 N	009° 19'.48 W
(6)	36° 53'.87 N	009° 17'.38 W
(7)	36° 46'.06 N	009° 08'.32 W
(8)	36° 44'.04 N	008° 59'.32 W

(b) A northbound traffic lane between the separation zone described in (a) and a separation zone bounded by lines connecting the following geographical positions, for ships not carrying dangerous or pollutant cargoes in bulk:

(9)	36° 40'.97 N	009° 00'.39 W
(10)	36° 43'.24 N	009° 10'.45 W
(11)	36° 52'.33 N	009° 20'.99 W
(12)	37° 00'.42 N	009° 23'.33 W
(13)	37° 00'.16 N	009° 24'.74 W
(14)	36° 51'.76 N	009° 22'.32 W
(15)	36° 42'.21 N	009° 11'.24 W
(16)	36° 39'.85 N	009° 00'.78 W

(c) A northbound traffic lane between the separation zones described in (b) and a central separation zone bounded by lines connecting the following geographical positions, for ships carrying dangerous or pollutant cargoes in bulk:

(17)	36° 36'.57 N	009° 01'.92 W
(18)	36° 39'.19 N	009° 13'.52 W
(19)	36° 50'.12 N	009° 26'.18 W
(20)	36° 59'.39 N	009° 28'.86 W
(21)	36° 58'.43 N	009° 33'.99 W
(22)	36° 48'.06 N	009° 30'.99 W
(23)	36° 35'.42 N	009° 16'.36 W
(24)	36° 32'.48 N	009° 03'.33 W

(d) A southbound traffic lane between the separation zones described in (c) and a separation zone bounded by lines connecting the following geographical positions, for ships not carrying dangerous or pollutant cargoes in bulk:

(25)	36° 29'.36 N	009° 04'.41 W
(26)	36° 32'.55 N	009° 18'.53 W
(27)	36° 46'.48 N	009° 34'.66 W
(28)	36° 57'.70 N	009° 37'.90 W
(29)	36° 57'.44 N	009° 39'.32 W
(30)	36° 45'.91 N	009° 35'.99 W
(31)	36° 31'.50 N	009° 19'.32 W
(32)	36° 28'.22 N	009° 04'.80 W

(e) A southbound traffic lane between the separation zones described in (d) and a line connecting the following geographical positions, for ships carrying dangerous or pollutant cargoes in bulk:

(33)	36° 25'.15 N	009° 05'.87 W
(34)	36° 28'.68 N	009° 21'.45 W
(35)	36° 44'.37 N	009° 39'.59 W
(36)	36° 56'.72 N	009° 43'.16 W

(f) The area between the separation zone described in paragraph (a) and the Portuguese coast, bounded on the north by the parallel of 37° 01'.40 N and on the east by the line connecting point with position 36° 45'.16 N 009° 01'.07 W and Ponta de Sagres lighthouse (36° 59'.75 N, 008° 56'.87 W) is designated as an inshore traffic zone.

AMENDMENTS TO TRAFFIC SEPARATION SCHEME IN THE APPROACHES TO PUERTO SAN MARTIN

(Reference charts: PERU HIDRONAV 226, 2262 and 2263

Note: These charts are based on World Geodetic System of 1984 Datum (WGS-84))

Description of the traffic separation scheme

1 The name of the traffic separation scheme has been amended to “In the approaches to Puerto Pisco”.

2 The traffic separation scheme “In the approaches to Puerto Pisco” consists of two parts:

Part I

Northern approaches:

(a) Two separation zones bounded by a line connecting the following geographical points:

(1)	13° 36'.59 S	076° 18'.86 W	(5)	13° 42'.11 S	076° 18'.13 W
(2)	13° 41'.23 S	076° 18'.25 W	(6)	13° 44'.74 S	076° 17'.80 W
(3)	13° 41'.24 S	076° 18'.03 W	(7)	13° 44'.74 S	076° 17'.57 W
(4)	13° 36'.59 S	076° 18'.64 W	(8)	13° 42'.12 S	076° 17'.91 W

(b) A traffic lane for northbound traffic, between the separation zones and a line connecting the following geographical points:

(9)	13° 36'.59 S	076° 18'.32 W	(10)	13° 44'.74 S	076° 17'.25 W
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(c) A traffic lane for southbound traffic, between the separation zones and the lines connecting the following geographical points:

(11)	13° 44'.74 S	076° 18'.13 W	(13)	13° 41'.20 S	076° 18'.58 W
(12)	13° 42'.08 S	076° 18'.46 W	(14)	13° 36'.59 S	076° 19'.18 W

Part II

Western approaches:

(a) A separation zone bounded by a line connecting the following geographical points:

(15)	13° 41'.53 S	076° 18'.53 W	(17)	13° 41'.28 S	076° 24'.99 W
(16)	13° 41'.75 S	076° 18'.50 W	(18)	13° 41'.06 S	076° 24'.99 W

(b) A traffic lane for westbound traffic, between the separation zone and a line connecting the following geographical points:

(19)	13° 41'.20 S	076° 18'.58 W	(20)	13° 40'.73 S	076° 24'.99 W
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(c) A traffic lane for eastbound traffic, between the separation zones and a line connecting the following geographical points:

(21) 13° 42'.08 S 076° 18'.46 W (22) 13° 41'.60 S 076° 24'.99 W

Precautionary area

A precautionary area is established bounded by a line connecting the following geographical points and the east line of the traffic separation scheme:

(3) 13° 41'.24 S 076° 18'.03 W
(19) 13° 41'.20 S 076° 18'.58 W
(21) 13° 42'.08 S 076° 18'.46 W
(8) 13° 42'.12 S 076° 17'.91 W
and
(9) 13° 36'.59 S 076° 18'.32 W
(10) 13° 44'.74 S 076° 17'.25 W

Area to be avoided

There is a circular area to be avoided of 200 m radius centred on the following geographical position:

(23) 13° 41'.68 S 076° 18'.11 W

This area is to be avoided by all ships.

ANNEX 2**ROUTING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES****ESTABLISHMENT OF AN “AREA TO BE AVOIDED” AND A MANDATORY “NO ANCHORING AREA” AT EL PASO ENERGY BRIDGE DEEPWATER PORT IN THE GULF OF MEXICO**

(Reference chart: United States 11340, 2003 edition.

Note: This chart is based on North American 1983 Datum.)

Description of an area to be avoided

The area contained within a circle of radius 2,000 metres centred on the following geographical position is designated as an area to be avoided:

28° 05'27 N

093° 03'.12 W

The area should be avoided by ships that are not going to carry out operations at the Deep Water Port.

(Reference chart: United States 11340, 2003 edition.

Note: This chart is based on North American 1983 Datum.)

Description of a mandatory no anchoring area

The area contained within a circle of radius 1,500 metres centred on the following geographical position is designated as a mandatory no anchoring area:

28° 05'27 N

093° 03'.12 W

The mandatory no anchoring area applies to all vessels.

Appropriate charts will include the following notation:

The El Paso Energy Bridge Deepwater Port at 28° 05'27 N, 093° 03'.12 W is surrounded by a Safety Zone of 500 metres radius. No vessel may enter the Safety Zone except those vessels intending to call or those assisting vessels at the Deepwater Port (DWP). There is a mandatory no anchoring area of 1,500 metres radius centred at 28° 05'27 N, 093° 03'.12 W. No vessel may anchor within this area. Further, there is an Area to be Avoided (ATBA) of 2,000 metres radius also centred at 28° 05'27 N, 093° 03'.12 W. The ATBA applies to all vessels not intending to call, or assisting vessels at the DWP.

DEEP-WATER ROUTE IN THE SOUTHERN APPROACH TO CHESAPEAKE BAY

(Reference chart: United States 12221, 2003 edition.

Note: This chart is based on North American 1983 Datum.)

Description of the deep-water route

The wording in the description in Ships' Routeing Guide remains the same.

Notes:

1 It is recommended that the following ships use the deep-water route when bound for Chesapeake Bay from sea or to sea from Chesapeake Bay:

Deep-draft ships, drafts defined as **12.8 metres/42 feet or greater** in fresh water, and naval aircraft carriers. **Ships drawing less than 12.8 metres/42 feet may use the deep-water route when, in their master's judgment, the effects of ship characteristics, its speed, and prevailing environmental conditions may cause the draft of the ship to equal or exceed 12.8 metres/42 feet.**

2 It is recommended that a ship using the deep-water route:

.1 announce its intention on VHF-FM channel 16 as it approaches Chesapeake Bay Southern Approach Lighted Whistle Buoy CB on the south end, or Chesapeake Bay **Lighted Entrance Buoy CH**, on the north end of the route;

The wording in Notes 2.2, 2.3, and 3 in Ships' Routeing Guide remains the same.

AREA TO BE AVOIDED IN THE REGION OF THE BERLENGAS ISLANDS

(Reference chart: "Cabo Finisterra a Casablanca", Number 21101, (INT 1081) Catalogue of Nautical Charts of the Portuguese Hydrographic Office, 4th impression - April 2002.

Note: This chart is based on European Datum 50.)

Description of the area to be avoided in the region of the Berlengas Islands

The proposed ATBA applies to all vessels above than 300 GT, except duly authorized ships navigating between Portuguese ports and not carrying dangerous cargoes or other harmful substances.

The area to be avoided consists of an area bounded on the north by the parallel of 39° 30'.0 N, on the south by the parallel of 39° 20'.0 N, on the west by the line connecting the geographical positions 39° 20'.00 N 009° 42'.2 W and 39° 30'.00 N 009° 42'.2 W, and on the east by the Portuguese coastline.

ANNEX 3

DRAFT AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING (RESOLUTION A.572(14), AS AMENDED)

Amend the General Provisions on Ships' Routeing, (resolution A.572(14), as amended), as follows:

Section 3

Delete the existing text of sub-paragraph 3.11.6 and replace by the following text:

“the delineation of the routeing system as shown on a nautical chart (type of nautical chart as appropriate) and a description of the system including the geographical co-ordinates. The co-ordinates should be given in the WGS 84 datum; in addition, geographical co-ordinates should also be given in the same datum as the nautical chart if this chart is based on a datum other than WGS 84.”

ANNEX 4

**DRAFT RESOLUTION MSC.[...](79)
(adopted on [...] December 2004)**

**ADOPTION OF AMENDMENTS TO THE GUIDELINES AND CRITERIA FOR SHIP
REPORTING SYSTEMS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

HAVING CONSIDERED, at its [seventy-ninth] session, the recommendation of the Sub-Committee on Safety of Navigation at its [fiftieth] session,

1. ADOPTS the amendments to section 3 of the Guidelines and Criteria for Ship Reporting Systems (resolution MSC.43(64) , as amended by resolution MSC.111(73)), set out in the Annex to the present resolution;
2. DETERMINES that the amendments to the Guidelines and Criteria for Ship Reporting Systems (resolution MSC.43(64), as amended by resolution MSC.111(73)) shall enter into force on [1 July 2005];
3. INVITES Governments developing ship reporting systems for adoption by the Organization in accordance with SOLAS regulation V/11 to take account of the amendments set out in the Annex to the present resolution;
4. REQUESTS the Secretary-General to bring this resolution to the attention of all Contracting Governments to the SOLAS Convention and to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

**AMENDMENTS TO GUIDELINES AND CRITERIA FOR
SHIP REPORTING SYSTEMS (RESOLUTION MSC.43(64) AS AMENDED BY
RESOLUTION MSC.111(73))**

Section 3

Delete the existing text of subparagraph 3.3.4 and replace with the following text:

“the delineation of the reporting system as shown on a nautical chart (type of nautical chart as appropriate) and a description of the system including the geographical co-ordinates. The co-ordinates should be given in the WGS 84 datum; in addition, geographical co-ordinates should also be given in the same datum as the nautical chart if this chart is based on a datum other than WGS 84.”

ANNEX 5

**DRAFT RESOLUTION MSC.[...](79)
ADOPTED ON ...(...)**

**ADOPTION OF MANDATORY SHIP REPORTING SYSTEM IN THE WESTERN
EUROPEAN PARTICULARLY SENSITIVE SEA AREA**

THE MARITIME SAFETY COMMITTEE,

RECALLING article 28(b) of the Convention related to the creation of the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO regulation V/11 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning the adoption by the Organization of ship-reporting systems,

RECALLING FURTHER resolution A.858(20), which authorizes the Committee to perform the function of adopting ship-reporting systems on behalf of the Organization,

TAKING INTO ACCOUNT the Guidelines and criteria for ship-reporting systems, adopted by resolution MSC.43(64), as amended by resolution MSC.111(73),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its fiftieth session,

1. ADOPTS, in accordance with SOLAS regulation V/11, the ship-reporting system in the Western European Particularly Sensitive Sea Area as described in the Annex to this resolution;
2. DECIDES that this mandatory ship-reporting system will enter into force at 0000 hours UTC on [1 July 2005];
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Contracting Governments to the SOLAS Convention and to members of the Organization who are not parties to the Convention.

ANNEX 1

DESCRIPTION OF THE MANDATORY SHIP REPORTING SYSTEM FOR THE WESTERN EUROPEAN PARTICULARLY SENSITIVE SEA AREA

The West European Tanker Reporting System (WETREP) is established in the Western European Particularly Sensitive Sea Area.

1 CATEGORIES OF SHIPS REQUIRED TO PARTICIPATE IN THE SYSTEM

1.1 Ships required to participate in the mandatory ship reporting system WETREP:

Every kind of oil tanker of more than 600 tonnes deadweight, carrying a cargo of:

- **heavy crude oil, meaning crude oils with a density at 15°C of higher than 900 kg/m³;**
- **heavy fuel oils, meaning fuel oils with a density at 15°C of higher than 900 kg/m³, or a kinematic viscosity at 50°C of higher than 180 mm²/s;**
- **bitumen and tar and their emulsions.**

1.2 Pursuant to SOLAS, the mandatory ship reporting system WETREP does not apply to any warship, naval auxiliary or other vessel owned or operated by a contracting government and used, for the time being, only on government non-commercial service.

2 GEOGRAPHICAL COVERAGE OF THE SYSTEM, AND NUMBER AND EDITION OF THE REFERENCE CHART USED FOR THE DELINEATION OF THE SYSTEM

2.1 The area covered by the reporting system WETREP is defined within the following co-ordinates and are also shown in the chartlet attached at appendix 3:

Number	Latitude	Longitude
1 (UK)	58° 30' N	UK coast
2 (UK)	58° 30' N	000° W
3 (UK)	62° N	000° W
4 (UK)	62° N	003° W
5 (UK+ Irl)	56° 30' N	012° W
6 (Irl)	54° 40'40.91" N	015° W
7 (Irl)	50° 56'45.36" N	015° W
8 (Irl+UK+F)	48° 27' N	006° 25' W
9 (F)	48° 27' N	008° W
10 (F+S)	44° 52' N	003° 10' W
11 (S)	44° 52' N	010° W
12 (S)	44° 14' N	011° 34' W
13 (S)	42° 55' N	012° 18' W
14 (S+P)	41° 50' N	011° 34' W
15(P)	37° N	009° 49' W

16 (P)	36° 20' N	009° 00' W
17(P)	36° 20' N	007° 47' W
18 (P)	Guadiana River mouth 37° 10' N	007° 25' W
19 (B)	51° 22'25" N	003° 21'52".5 ^E (border between B and NL)
20 (UK)	52° 12' N	UK east coast
21 (IRL)	52° 10'.3" N	006° 21'.8" W
22 (UK)	52° 01'.52" N	005° 04'.18" W
23 (UK)	54° 51'.43" N	005° 08'.47" W
24 (UK)	54° 40'.39" N	005° 34'.34" W

2.2 The reference charts are Admiralty chart Nos. 4011 (datum WGS 84).

3 FORMAT, CONTENTS OF REPORT, TIMES AND GEOGRAPHICAL POSITIONS FOR SUBMITTING REPORT. AUTHORITIES TO WHOM THE REPORTS MUST BE SENT AND AVAILABLE SERVICES

3.1 Format

3.1.1 WETREP reports shall be sent to the nearest participating coastal or communication station listed in annex 1, appendix 1 and shall be drafted in accordance with the format as shown in appendix 2.

3.1.2 The format of the report described below is in accordance with resolution A.851(20) – appendix, paragraph 2.

3.2 Contents of report

3.2.1 The report required from participating ships contains information that is essential to achieve the objectives of the system:

- .1 the ship's name, call sign, IMO number/MMSI number and position are needed for establishing the identity of the ship and its initial position (letters A, B and C);
- .2 the ship's course, speed and destination, are important in order to maintain track of the ship so as to be able to implement search and rescue measures if a report from a ship fails to appear; to be able to instigate measures for the safe navigation of the ship; and to prevent pollution in the areas where weather conditions are severe (letters E, F, G and I). Proprietary information obtained as a requirement of the mandatory ship reporting system WETREP will be protected under this system consistent with the Guidelines and Criteria for Ship Reporting Systems, as amended;
- .3 the number of persons on board and other relevant information are important in relation to the allocation of resources in a search and rescue operation (letters P, T and W); and
- .4 in accordance with the provisions of the SOLAS and MARPOL conventions, ships will provide information on defects, damage, deficiencies or other limitations (under "Q") as well as, additional information (under "X").

3.3 Time and geographical position for submitting report

3.3.1 Ships must report:

- .1 on entry into the Reporting Area as defined in paragraph 2; or
- .2 immediately on departing from a port, terminal or anchorage within the Reporting Area; or
- .3 when they deviate from routing to their original declared destination port/terminal/anchorage or position “for orders” given at time of entry into Reporting Area; or
- .4 when deviation from planned route is necessary due to weather or equipment malfunction or a change in the navigational status; and
- .5 when finally exiting from Reporting Area.

3.3.2 Ships need not report if, while on normal passage routeing during transit of Reporting Area, the boundary of the Reporting Area is crossed on other occasions apart from the initial entry and final exit.

3.4 Shore-based authorities to whom reports are sent

3.4.1 Upon entering the WETREP reporting area, ships will notify the co-ordination centre of the responsible authority of the Coastal State participating in the system. The vessel traffic services, RCC, coastal radio station or others facilities to whom the reports must be sent to are listed in appendix 1.

3.4.2 Should the ship be unable to send the report to the nearest coastal radio station or other facility, the report shall be sent to the next-nearest coastal radio station or other facility as listed in appendix 1.

3.4.3 Reports may be sent by any modern communication form, including Inmarsat-C, telefax and e-mail as appropriate.

4 INFORMATION TO BE GIVEN TO PARTICIPATING SHIPS AND PROCEDURES TO BE FOLLOWED

4.1 If requested, coastal States can provide ships with information of importance for the safety of navigation in the ship reporting area, from broadcasting devices set up in the coastal States.

4.2 If necessary, individual information can be provided to a ship in relation to the special local conditions.

5 COMMUNICATIONS REQUIRED FOR THE SYSTEM, FREQUENCIES ON WHICH REPORTS SHOULD BE TRANSMITTED AND INFORMATION TO BE REPORTED

5.1 The vessel traffic services, RCC, coastal radio station or others facilities to whom the reports must be sent to are listed in appendix 1.

5.2 The reports required from a ship entering and navigating in the reporting area shall begin with the word WETREP and shall contain a two-letter abbreviation for identification of the report (Sailing Plan, Final Report or Deviation Report). Telegrams so prefixed are dispatched free of charge to ships.

5.3 Dependent on the type of report, the following information shall be included as referred to under paragraph 6 of appendix 2:

- A : Ship identification (ship name, call sign, IMO identification number and MMSI Number)
- B : Date time group
- C : Position
- E : True course
- F : Speed
- G : Name of last port of call
- I : Name of next port of call with the ETA
- P : Oil cargo type(s), quantity, grade(s) and density. If those tankers carry other hazardous cargo simultaneously: the type, quantity and IMO class of that cargo, as appropriate
- Q : To be used in cases of defects or deficiency affecting normal navigation
- T : Address for the communication of cargo information
- W : Number of persons on board
- X : Various information applicable for those tankers:
 - characteristics and estimated quantity of bunker fuel, for tankers carrying more than 5,000 tonnes of bunker fuel
 - navigational status, (for example, under way with engines, restricted in ability to manoeuvre, etc.)

5.4 Reports shall be in a format consistent with IMO resolution A.851(20).

5.5 Reports shall be free of charge for reporting ships.

6 RELEVANT RULES AND REGULATIONS IN FORCE IN THE AREA OF THE SYSTEM

6.1 Regulations for the Preventing Collisions at Sea

The International Regulations for Preventing Collisions at Sea, 1972 (COLREGs), as amended, apply throughout the area covered by the system.¹

6.2 Traffic separation schemes and other routeing measures

6.2.1 The following IMO adopted Traffic Separation Schemes:

West of the Scilly Isles
South of the Scilly Isles
Off Land's End, between Seven Stones and Longships
South of the Scilly Isles
West of the Scilly Isles
Off Ushant
Off Casquets
In the Strait of Dover and adjacent waters
Off Fastnet Rock
Off Smalls
Off Tuskar Rock
Off Skerries
In the North Channel
Off Finisterre
[Off Berlenga]
Off Cape Roca
Off Cape S. Vicente

6.2.2 The following IMO adopted Deep-Water Routes:

Deep-water route leading to the Port of Antifer
Deep-water route forming part of the north-eastbound traffic lane of the Strait of Dover and adjacent waters traffic separation scheme
Deep-water route west of the Hebrides

6.2.3 The following IMO adopted Areas to be Avoided:

In the region of the Rochebonne Shelf
In the English Channel and its approaches
In the Dover Strait
Around the F3 station within the separation scheme "In the Strait of Dover and adjacent waters"

¹ Ships carrying dangerous or polluting goods coming from or bound for a port within the reporting area must comply with the European Community Directive on *Vessel Traffic Monitoring* (2002/59/EC).
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In the region of the Orkney Islands
In the region of the Fair Isle
In the region of the Shetland Islands
Between the Smalls Lighthouse and Grassholme Island
[In the region of the Berlengas Islands]

6.2.4 The following other IMO adopted Routeing Measures:

Recommended directions of traffic flow in the English Channel
Recommended routes in the Fair Isle Channel
Recommendations on navigation around the United Kingdom coast

6.2.5 The following IMO adopted Mandatory Ship Reporting Systems:

Off "Les Casquets" and the adjacent coastal area
In the Dover Strait/Pas-de-Calais
Off Ushant
Off Finisterre

6.2.6 The following Coastal Vessel Traffic Services (VTS):

Corsen VTS
Dover, Channel Navigation Information Service (CNIS)
Finisterre VTS
Gris-Nez VTS

7 SHORE-BASED FACILITIES TO SUPPORT THE OPERATION OF THE SYSTEM

7.1 The vessel traffic services, RCC, coastal radio stations or others facilities to whom the reports must be sent to are listed in appendix 1.

7.2 The vessel traffic services, RCC, coastal radio stations or others facilities that form a part of the service, will at all times be manned.

7.3 All communications facilities

All IMO approved communication methods are accepted and available as detailed in appendix 1.

7.4 Staff training and qualification

Personnel are trained according to national and international recommendations. The training of personnel comprises an overall study of the navigation safety measures, the relevant international (IMO) and national provisions with respect to the safety of navigation.

8 PROCEDURES TO BE FOLLOWED IF SHORE BASED COMMUNICATIONS FAIL

Should the ship be unable to send the report to the nearest coastal radio station or other facility, the report shall be sent to the next-nearest coastal radio station or other facility as listed in appendix 1.

9 MEASURES TO BE TAKEN IF A SHIP FAILS TO COMPLY WITH THE REQUIREMENTS OF THE SYSTEM

The objectives of the system are to initiate SAR and measures to prevent pollution as fast and effective as possible if an emergency is reported or a report from a ship fails to appear, and it is impossible to establish communication with the ship. All means will be used to obtain the full participation of ships required to submit reports. If reports are not submitted and the offending ship can be positively identified, then information will be passed on to the relevant flag State Authorities for investigation and possible prosecution in accordance with national legislation. The mandatory ship reporting system WETREP is for the exchange of information only and does not provide any additional authority for mandating changes in the vessel's operations. This reporting system will be implemented consistent with UNCLOS, SOLAS and other relevant international instruments so that the reporting system will not provide the basis to impinge on a transiting vessel's passage through the reporting area.

Appendix 1

Vessel Traffic Services, RCC, coast radio station or other facilities to whom the reports must be submitted (Geographical positions refer to the WGS 84)

Position co-ordinates

BELGIUM

MRCC – SAR Oostende: 5114N 0255 E

Tel: +32 59 70 10 00

Tel.: +32 59 70 11 00

Fax: +32 59 70 36 05

Telex: 82125

VHF : 9, 16, 67, 70

MF: 2182

MMSI: 00 205 99 81

FRANCE

MRCC Gris-Nez: 50° 52' N 01° 35' E

Tel.: +33 3 21 87 21 87

Fax: +33 3 21 87 78 55

Telex: 130680

Inmarsat-C: 422799256

VHF: 16, 70

MMSI: 002275100

MRCC Corsen: 48° 25' N 04° 47' W

Tel.: +33 2 98 89 31 31

Fax: +33 2 98 89 65 75

Telex: 940086

Inmarsat-C: Nil

VHF: 16, 70

MMSI: 002275300

IRELAND

MRCC Dublin

Tel: +353 1 6620922/23

Fax: +353 1 6620795

e-mail: mrccdublin@irishcoastguard.ie

Communications may be sent to MRCC Dublin via:

MRSC Valentia (EJK) 51° 56' N 10° 21' W

MRSC Malin Head (EJM) 55° 22' N 07° 21' W

PORTUGAL

MRCC Lisbon: 38° 40' N 09° 19' W
Tel: +351 21 4401950, or
+351 21 4401919 (for emergency only)
Fax: +351 21 4401954
Telex: 60747 P.
e-mail: mrcclisboa@netc.pt.

SPAIN

MRCC Madrid 40° 24' N 03° 43' W
Tel: +34 91 7559133
Fax: +34 91 5261440
Telex: +5241210, +5241224
e-mail: cnecs@sasemar.es

MRCC Finisterre: 42° 42' N 08° 59' W 002240993
Tel: +34 981 767500
Fax: +34 981 767740
Telex: +5282268, +5286207
e-mail: finister@sasemar.es
VHF: 16 & 11
MF: 2182

MRCC Bilbao 43° 20'.8 N 03° 01' W 002241021
Tel: +34 944 839286
Fax: +34 944 839161
e-mail: bilbao@sasemar.es
VHF: 16 & 10

UNITED KINGDOM

MRCC Falmouth
Tel: +(0)1326 317575
Fax: +(0)1326 318342
Telex: +51 42981
Inmarsat-A and Inmarsat-C
e-mail: falmouthcoastguard@mcga.gov.uk

Sea Area A2 – MF DSC Coast Stations

		MMSI
MRCC Aberdeen	57° 25' N 01° 51' W	002320004
MRCC Clyde	55° 58' N 04° 48' W	002320022
MRCC Falmouth	50° 08' N 05° 07' W	002320014
MRSC Holyhead	53° 19' N 04° 38' W	002320018
MRSC Humber	54° 05' N 01° 10' W	002320007
Cullercoats	55° 04' N 01° 28' W	(sub-station)
MRSC Milford Haven	51° 41' N 05° 03' W	002320017
MRCC Shetland	60° 09' N 01° 08' W	002320001
MRSC Stornoway	58° 13' N 06° 20' W	002320024

Appendix 2

Western European Ship Reporting System (WETREP)

Rules for Drafting of Reports

- 1 Ships on voyage to and from the Western European Reporting Area shall send reports:
 - .1 on entry into the Reporting Area; or
 - .2 immediately on departing from a port, terminal or anchorage within the Reporting Area; or
 - .3 when they deviate from routing to their original declared destination port/terminal/anchorage or position “for orders” given at time of entry into Reporting Area; or
 - .4 when deviation from planned route is necessary due to weather or equipment malfunction or where information under entry “Q” is necessary ; and
 - .5 when finally exiting from Reporting Area.
- 2 Ships need not report if, while on normal passage routeing during transit of Reporting Area, the boundary of the Reporting Area is crossed on other occasions apart from the initial entry and final exit.
- 3 Upon entering the WETREP reporting area, ships will notify the co-ordination centre of the responsible authority of the Coastal State participating in the system. The vessel traffic services, RCC, coastal radio station or others facilities to whom the reports must be sent to are listed in appendix 1.
- 4 Should the ship be unable to send the report to the nearest coastal radio station or other facility, the report shall be sent to the next-nearest coastal radio station or other facility as listed in appendix 1.
- 5 Each report shall begin with the word WETREP and a 2-letter abbreviation for identification of the report. Messages so prefixed are dispatched free of charge to ships.
- 6 The reports shall be drawn up in accordance with the following table. The designators A, B, C, E, F, G, I, P, T, W and X are mandatory for a sailing plan report, A, B, C, E and F for a final report, A, B, C, E, F, and I for a deviation report. The designator Q shall also be included at any time where defects including breakdown, damage, deficiencies, circumstances affecting normal navigation should occur within the reporting area.

Designator	Function	Text
Name of system	Code word	“WETREP”
	Type of report: Sailing Plan Final Report Deviation Report	One of the following 2-letter identifiers: “SP” (Sailing Plan) “FR” (Final Report - on <u>final</u> leaving the Reporting Area) containing only A, B, C, E & F “DR” (Deviation Report) containing only A, B, C, E, F, and I
A	Ship	Name and call sign (ship name, call sign, IMO identification number and MMSI Number) (e.g.: NONESUCH/KTOI)
B	Date Time Group corresponding to the position under designator C given in UTC (Co-ordinated Universal Time)	A 6-digit group followed by a Z. The first 2 digits giving date of month, the next 2 digits giving hours and the last 2 digits minutes. The Z indicates that the time is given in UTC (e.g.: 081340Z).
C	Position by latitude and longitude	A 4-digit group giving latitude in degrees and minutes suffixed with N, and a 5-digit group giving longitude in degrees and minutes suffixed with W. (e.g.: 5512N 3420W).
E	Course	True course A 3-digit group (e.g.: 083).
F	Speed	Speed in knots A 2-digit group (e.g.: 14).
G	Name of last port of call	The name of the last port of call (e.g.: New York).
I	Destination and ETA (UTC)	The name of the destination followed by expected time of arrival, expressed as under designator B. (e.g.: Milford Haven 181400Z).
P	Cargo	Oil cargo type(s), quantity, grade(s) and density of heavy crude oil, heavy fuel oil and bitumen and tar. If those tankers carry other hazardous cargo simultaneously: the type, quantity and IMO class of that cargo, as appropriate.
Q	Defect, damage, deficiency, limitations	Brief details of defects including breakdown, damage, deficiencies or other circumstances affecting normal navigation.
T	Address for the communication of cargo information	Name, telephone number and either: facsimile, e-mail address or URL.
W	Total number of persons on board	State the number
X	Various information	Various information applicable for those tankers: <ul style="list-style-type: none"> - characteristics and estimated quantity of bunker fuel, for tankers carrying more than 5,000 tonnes of bunker fuel, - navigational status (for example, under way with engines, at anchor, not under command, restricted in ability to manoeuvre, constrained by draught, moored, aground, etc.).

- 7 **Sailing Plan** (“SP”) to be sent as a first report:
- a On entering the Reporting Area as defined in paragraph 2.1.
 - b Immediately on departing from a port located within the Reporting Area.

Example:

Name of station to which the report is being sent

WETREP– SP

A. NONESUCH/KTOI

B. 161520Z

C. 4105N1115W

E. 026

F. 15

G. RAS TANNURAH

I. ROTTERDAM 230230Z

P. 56,000 TONNES HEAVY FUEL OILS

T. J. Smith, 00 47 22 31 56 10, Facsimile 00 47 22 31 56 11

W. 23

X. NONE, NONE

- 8 **Final Report** (“FR”) to be sent:
- a On leaving the Reporting Area.
 - b On arrival in a port situated within the Reporting Area.

Example:

Name of station to which the report is being sent

WETREP– FR

A. NONESUCH/KTOI

B. 201520Z

C. 5145N0238E

E. 044

F. 16

- 9 **Deviation Report** (“DR”) to be sent:
- a When they deviate from routing to their original declared destination/port/terminal/anchorage or position "for orders" given at time of entry into the Reporting Area.
 - b When deviation from planned route is necessary due to weather or equipment malfunction or a change in navigational status.

Example:

Name of station to which the report is being sent

WETREP– FR

A. NONESUCH/KTOI

B. 201520Z

C. 4957N0207W

E. 073

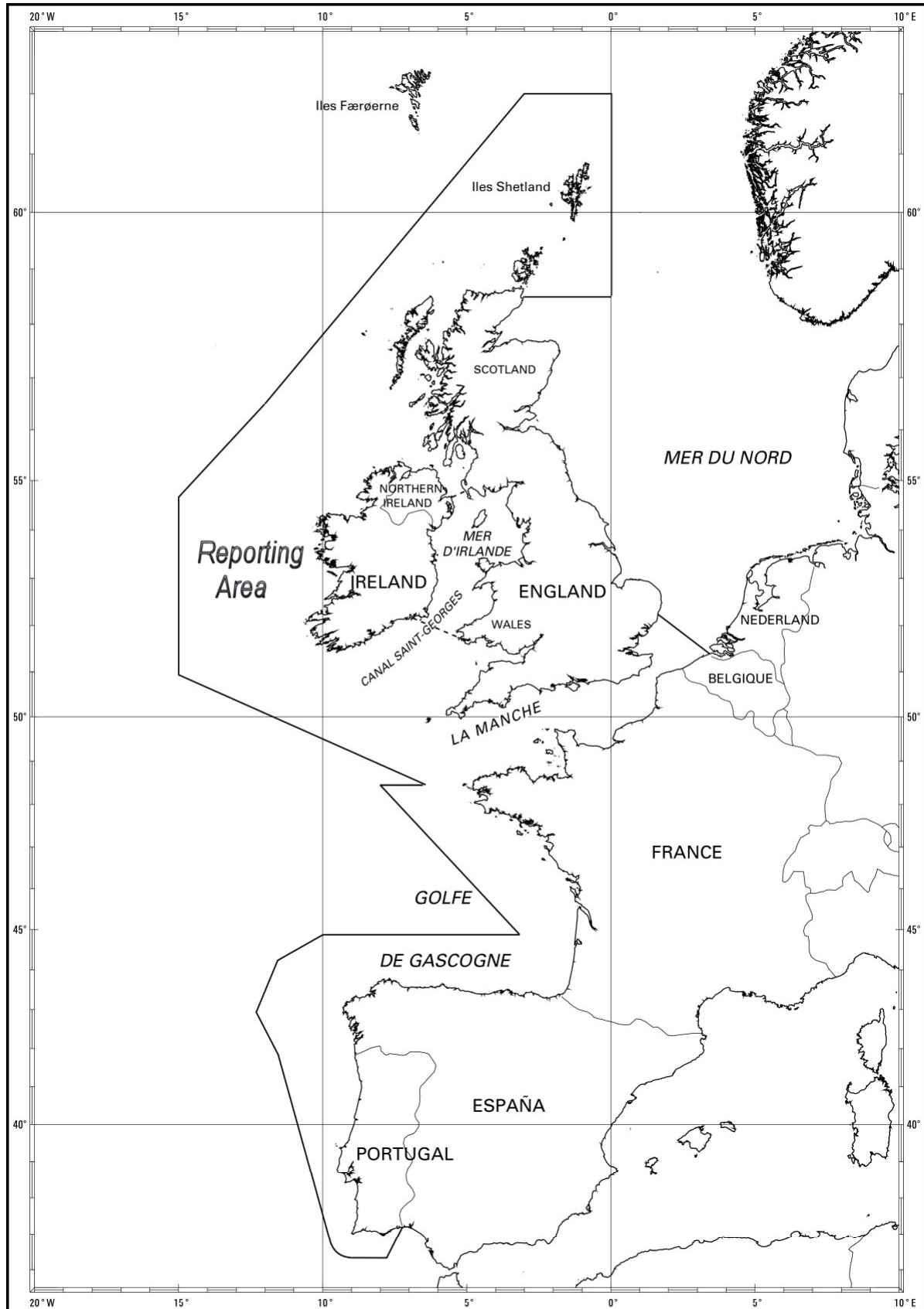
F. 14

I. ROTTERDAM 270230Z

X. NONE, SATISFACTORY

Appendix 3

Chartlet



ANNEX 2

SUMMARY

1 Ships required to report

In the reporting system WETREP, every kind of oil tanker of more than 600 tonnes deadweight, carrying a cargo of:

- heavy crude oil, meaning crude oils with a density at 15°C of higher than 900 kg/m³;
- heavy fuel oils, meaning fuel oils with a density at 15°C of higher than 900 kg/m³, or a kinematic viscosity at 50°C of higher than 180 mm²/s;
- bitumen and tar and their emulsions.

2 Position for submitting reports

Ships on voyage to and from the Western European Reporting Area shall send reports:

- .1 on entry into the Reporting Area; or
- .2 immediately on departing from a port, terminal or anchorage within the Reporting Area; or
- .3 when they deviate from routing to their original declared destination port/terminal/anchorage or position “for orders” given at time of entry into the Reporting Area; or
- .4 when deviation from planned route is necessary due to weather or equipment malfunction or a change in the navigational status; and
- .5 when finally exiting from the Reporting Area.

Ships need not report if, while on normal passage routeing during transit of the Reporting Area, the boundary of the Reporting Area is crossed on other occasions apart from the initial entry and final exit.

3 Reference charts

United Kingdom Hydrographic chart No. 4011. (Datum WGS 84).

4 Reporting format

System identifier: WETREP

Data to be transmitted in WETREP:

- A : Ship identification (ship name, call sign, IMO identification number and MMSI Number)
B : date time group
C : Position
E : True course
F : Speed
G : Name of last port of call
I : Name of next port of call with ETA
P : Oil cargo type(s), quantity, grade(s) and density (If those tankers carry other hazardous cargo simultaneously: the type, quantity and IMO class of that cargo, as appropriate)
Q : To be used in cases of defects or deficiency affecting normal navigation
T : Address for the communication of cargo information
W : Number of persons on board
X : Various information applicable for those tankers:
- characteristics and estimated quantity of bunker fuel, for tankers carrying more than 5,000 tonnes of bunker fuel
 - navigational status (for example, under way with engines, restricted in ability to manoeuvre, etc.)

5 Authority receiving the report

5.1 Upon entering the WETREP reporting area, ships will notify the coordination centre of the responsible authority of the Coastal State participating in the system. The vessel traffic services, RCC, coastal radio station or others facilities to whom the reports must be sent to are listed in appendix 1.

5.2 Should the ship be unable to send the report to the nearest coastal radio station or other facility, the report shall be sent to the next-nearest coastal radio station or other facility as listed in appendix 1.

6 Communication

Reports may be sent by any modern communication form, including Inmarsat C, telefax and e-mail as appropriate.

ANNEX 6**DRAFT RESOLUTION MSC.[...](79)
(adopted on [..] December 2004)****PERFORMANCE STANDARDS FOR THE PRESENTATION OF
NAVIGATION-RELATED INFORMATION ON
SHIPBORNE NAVIGATIONAL DISPLAYS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

RECOGNIZING that, harmonization of the requirements for the presentation of navigation-related information on the bridge will ensure that all navigational displays adopt a consistent human-machine interface philosophy and implementation,

RECOGNIZING FURTHER that for safety reasons the terms, abbreviations and symbols used for the display of navigation-related information on all shipborne navigation equipment and systems should be consistent,

HAVING CONSIDERED the recommendation on the performance standards for the presentation of navigation-related information on shipborne navigational displays made by the Sub-Committee on Safety of Navigation at its fiftieth session,

1. ADOPTS the Recommendation on Performance Standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays, set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that navigational shipborne displays on the bridge of a ship installed on or after [1 July 2008] conform, from the presentation of navigation-related information point of view, to performance standards not inferior to those specified in the Annex to the present resolution.

ANNEX

DRAFT RECOMMENDATION ON PERFORMANCE STANDARDS FOR THE PRESENTATION OF NAVIGATION-RELATED INFORMATION ON SHIPBORNE NAVIGATIONAL DISPLAYS

1 PURPOSE

These performance standards harmonize the requirements for the presentation of navigation-related information on the bridge of a ship to ensure that all navigational displays adopt a consistent human machine interface philosophy and implementation.

These performance standards supplement and, in case of a conflict, take priority over, presentation requirements of the individual performance standards adopted by the Organization for relevant navigational systems and equipment, and cover the presentation of navigation-related information by equipment for which performance standards have not been adopted.

2 SCOPE

These performance standards specify the presentation of navigational information on the bridge of a ship, including the consistent use of navigational terms, abbreviations, colours and symbols, as well as other presentation characteristics.

These performance standards also address the presentation of navigation information related to specific navigational tasks by recognizing the use of user selected presentations in addition to presentations required by the individual performance standards adopted by the Organization.

3 APPLICATION

The general principles of these standards are applicable for all displays on the bridge of a ship.*

These performance standards are applicable to any display equipment associated with the navigation systems and equipment for which individual performance standards have been adopted by the Organization. They also address display equipment associated with navigation systems and equipment for which individual performance standards have not been adopted.

In addition to the general requirements set out in resolution A.694(17)** display equipment should meet the requirements of these performance standards, as applicable.

4 DEFINITIONS

Definitions are given in the appendix.

* The general principles are addressed in paragraphs 5 and 8.

** IEC Publication 60945 (see Appendix 1).

5 GENERAL REQUIREMENTS FOR THE PRESENTATION OF INFORMATION

5.1 Arrangement of information

5.1.1 The presentation of information should be consistent with respect to screen layout and arrangement of information. Data and control functions should be logically grouped. Priority of information should be identified for each application, permanently displayed and presented to the user in a prominent manner by, for example, use of position, size and colour.

5.1.2 The presentation of information should be consistent with respect to values, units, meaning, sources, validity, and if available, integrity.

5.1.3 The presentation of information should be clearly separated into an operational display area (e.g. radar, chart) and one or more user dialogue areas (e.g. menus, data, control functions).

5.2 Readability

5.2.1 The presentation of alphanumeric data, text, symbols and other graphical information (e.g. radar image) should support readability from typical user positions under all ambient light conditions likely to be experienced on the bridge of a ship, and with due consideration to the night vision of the officer of the watch.

5.2.2 Alphanumeric data and text should be presented using a clearly legible non-italic, sans-serif font. The font size should be appropriate for the viewing distance from user positions likely to be experienced on the bridge of a ship.

5.2.3 Text should be presented using simple unambiguous language that is easy to understand. Navigation terms and abbreviations should be presented using the nomenclature defined in SN/Circ.[..].

5.2.4 When icons are used, their purpose should be intuitively recognized by appearance, placement and grouping.

5.3 Colours and intensity

5.3.1 The colours used for the presentation of alphanumeric data, text, symbols and other graphical information should provide sufficient contrast against the background under all lighting conditions likely to be experienced on the bridge of a ship.

5.3.2 The colours and brightness should take into account the light conditions of daylight, dusk and night. The presentation should support night viewing by showing light foreground information on a dark non-reflecting background at night.

5.3.3 The background colour and contrast should be chosen to allow presented information to be easily discriminated without degrading the colour coding aspects of the presentation.

5.4 Symbols

5.4.1 Symbols used for the presentation of operational information are defined in SN/Circ.[..].

5.4.2 Symbols used for the display of charted information should comply with relevant IHO standards.

5.5 Coding of information

5.5.1 When colour coding is used for discrimination or conspicuity of alphanumeric text, symbols and other graphical information, all colours in the set should clearly differ from one another.

5.5.2 When colour coding is used, the colour red should be used for coding of alarm related information.

5.5.3 When colour coding is used, it should be used in combination with other symbol attributes, such as size, shape, and orientation.

5.5.4 Flashing of information should be reserved for unacknowledged alarms.

5.6 Integrity marking

5.6.1 The source, validity, and where possible, the integrity of information should be indicated. Invalid information or information with low integrity should be clearly marked, qualitatively and/or quantitatively. Invalid information or information with low integrity may be quantitatively indicated by displaying absolute or percentage values.

5.6.2 When colour coding is used, information with low integrity should be qualitatively marked by using yellow, and invalid information should be qualitatively marked by using red.

5.6.3 In order to show that the screen is being refreshed, means should be provided to immediately make the user aware of a presentation failure on an operational display (e.g. “picture freeze”).

5.7 Alarms and indications

5.7.1 The operational status of information should be indicated as follows:

Status	Visual Indication	Audible Signal
Alarm, not acknowledged	Red, flashing	Accompanied by an audible signal
Alarm, acknowledged Invalid Information	Red	Suppression of audible signal
Important Indications (Warnings) (e.g. low integrity)	Yellow	Silence unless otherwise specified by the Organization
Normal state	None required, optionally green	Silence

5.7.2 A list of alarms should be provided based on the sequence of occurrence. Additional indication of priority, as set by the user, should be provided on displays showing alarms from multiple sources. Alarms that have been acknowledged and are no longer relevant should be deleted from the list of alarms, but may be retained in an alarm history list.

5.7.3 When a single display is used to present information from multiple navigation systems and equipment, the presentation of alarms and indications should be consistent for the display of the time of alarm occurrence, the cause of the alarm, the source of the alarm and the status of the alarm (e.g. acknowledged, not acknowledged).

5.8 Presentation modes

If displays are capable of presenting information in different mode(s), there should be a clear indication of the mode in use, for example orientation, stabilization, motion, and chart projection.

5.9 User manuals

The user manual and operator instructions should be available in the English language at least. The user manual or reference guide should include a list of all terms, abbreviations, and symbols and their explanations presented by the equipment.

6 PRESENTATION OF OPERATIONAL INFORMATION

6.1 Presentation of own ship information

6.1.1 When a graphical representation of own ship is provided, it should be possible for the user to select either a scaled ship's outline or a simplified symbol as specified in SN/Circ [...]. The size of the ship's outline or the simplified symbol in the graphical presentation should be the true scale size of the ship or 6 mm, whichever is greater.

6.1.2 A heading line, and where appropriate a velocity vector, should be associated with own ship symbol and should originate at the position of the consistent common reference point (CCRP).

6.2 Presentation of charted information

6.2.1 The presentation of charted information that is issued by, or on the authority of a government authorized hydrographic office, or other relevant government institution should comply with the relevant IHO standards.

6.2.2 The presentation of proprietary charted information should comply with relevant IHO standards, as far as practical. There should be a clear indication when the presentation is not in accordance with IHO standards.

6.2.3 The presentation of user-added charted information should comply with the relevant IHO standards, as far as practical.

6.2.4 If chart data derived from different scales appear on the display, the scale boundary should be clearly indicated.

6.3 Presentation of radar information

6.3.1 Radar images should be displayed by using a basic colour that provides optimum contrast. Radar echoes should be clearly visible when presented on top of a chart background. The relative strength of echoes may be differentiated by tones of the same basic colour. The basic colour may be different for operation under different ambient light conditions.

6.3.2 Target trails should be distinguishable from targets and clearly visible under all ambient light conditions.

6.4 Presentation of target information

6.4.1 General

6.4.1.1 Target information may be provided by radar target tracking and/or by reported target information from the Automatic Identification System (AIS).

6.4.1.2 The operation of the radar target tracking function and the processing of reported AIS information, including the number of targets presented, related to screen size, is defined within the Performance Standards for Radar Equipment as adopted by the Organization. The presentation of radar target tracking and AIS information is defined within these performance standards.

6.4.1.3 As far as practical, the user interface and data format for operating, displaying and indicating radar tracking and AIS information should be consistent.

6.4.2 Target capacity

6.4.2.1 There should be an indication when the target tracking and/or reported target processing/display capacity is about to be exceeded.

6.4.2.2 There should be an indication when the target tracking and/or reported target processing/display capacity has been exceeded.

6.4.3 Filtering of AIS sleeping targets

6.4.3.1 To ensure that the clarity of the total presentation is not substantially impaired, it should be possible to filter the presentation of sleeping AIS targets (e.g. by target range, CPA/TCPA or AIS target class A/B, etc.).

6.4.3.2 If a filter is applied, there should be a clear and permanent indication. The filter criteria in use should be readily available.

6.4.3.3 It should not be possible to remove individual AIS targets from the display.

6.4.4 Activation of AIS targets

6.4.4.1 If zones for the automatic activation of AIS targets are provided, they should be the same as for automatic radar target acquisition, if available. Any user defined zones (e.g. acquisition/activation zones) in use should be presented in graphical form.

6.4.4.2 In addition, sleeping AIS targets should be automatically activated when meeting user defined parameters (e.g. target range, CPA/TCPA or AIS target class A/B).

6.4.5 Graphical presentation

6.4.5.1 Targets should be presented with their relevant symbols according to SN/Circ[..].

6.4.5.2 AIS information should be graphically presented either as sleeping or activated targets.

6.4.5.3 The course and speed of a tracked radar target or reported AIS target should be indicated by a vector that clearly shows the predicted motion. The vector time (length) should be consistent for presentation of any target regardless of its source.

6.4.5.4 The presentation of vector symbols should be consistent irrespective of the source of information. The presentation mode should be clearly and permanently indicated, including for example: True/Relative vector, vector time and vector stabilisation.

6.4.5.5 The orientation of the AIS target symbol should indicate its heading. If the heading information is not received, the orientation of the AIS symbol should be aligned to the COG. When available, the turn or rate of turn (ROT) indicator and/or the path prediction should indicate the manoeuvre of an activated AIS target.

6.4.5.6 A consistent common reference point should be used for the alignment of tracked target symbols and AIS target symbols with other information on the same display.

6.4.5.7 On large scale/low range displays, a means to present a true scale outline of an activated AIS target should be provided.

6.4.5.8 It should be possible to display the past positions of activated targets.

6.4.6 Target data

6.4.6.1 A target selected for the display of its alphanumeric information should be identified by the relevant symbol. If more than one target is selected for data display, the symbols and the corresponding data should be clearly identified.

6.4.6.2 There should be a clear indication to show that the target data is derived from radar or AIS or from a combination of these.

6.4.6.3 For each selected tracked radar target the following data should be presented in alphanumeric form: Source(s) of data, measured range of target, measured bearing of target, predicted target range at the closest point of approach (CPA), predicted time to CPA (TCPA), true course of target, true speed of target. Additional target information should be provided on request.

6.4.6.4 For each selected AIS target the following data should be presented in alphanumeric form: Source of data, ship's identification, position and its quality, calculated range of target, calculated bearing of target, CPA, TCPA, COG, SOG, navigational status. Ship's heading and rate of turn should also be made available. Additional target information should be provided on request.

6.4.6.5 If the received AIS information is incomplete, the absent information should be clearly indicated in the target data field as missing.

6.4.6.6 The data should be displayed and continually updated, until another target is selected for data display or until the window is closed.

6.4.6.7 Means should be provided to present own ship AIS data on request.

6.4.6.8 The alphanumeric displayed data should not obscure graphically presented operational information.

6.4.7 Operational alarms

6.4.7.1 A clear indication of the status of the alarms and of the alarm criteria should be given.

6.4.7.2 A CPA/TCPA alarm of a tracked radar or activated AIS target should be clearly indicated and the target should be clearly marked by a dangerous target symbol.

6.4.7.3 If a user defined acquisition/activation zone facility is provided, a target entering the zone should be clearly identified with the relevant symbol and for tracked radar targets an alarm should be given. The zone should be identified with the relevant symbology, and should be applicable to tracked radar and AIS targets.

6.4.7.4 The last position of a lost target should be clearly marked by a lost target symbol on the display, and the lost target alarm should be given. The lost target symbol should disappear if the signal is received again, or after the alarm has been acknowledged. There should be a clear indication whether the lost target alarm function for AIS targets is enabled or disabled.

6.4.8 AIS and radar target association

6.4.8.1 An automatic target association function serves to avoid the presentation of two target symbols for the same physical target. If target data from AIS and radar tracking are both available and if the AIS and radar information are considered as one target, then as a default condition, the activated AIS target symbol and the alphanumeric AIS target data should be automatically selected and displayed. The user should have the option to change the default condition to the display of tracked radar targets and should be permitted to select either radar tracking or AIS alphanumeric data.

6.4.8.2 If the AIS and radar information are considered as two distinct targets, one activated AIS target and one tracked radar target should be displayed. No alarm should be raised.

6.4.9 AIS presentation status

The AIS presentation status should be indicated as follows:

Function	Cases to be Presented		Presentation
AIS ON/OFF	AIS processing switched ON / graphical presentation switched OFF	AIS processing switched ON / graphical presentation switched ON	Alphanumeric or graphical
Filtering of sleeping AIS targets (6.4.3)	Filter status	Filter status	Alphanumeric or graphical
Activation of Targets (6.4.4)		Activation criteria	Graphical
CPA/TCPA Alarm (6.4.7)	Function ON/OFF CPA/TCPA Criteria Sleeping targets included	Function ON/OFF CPA/TCPA Criteria Sleeping targets included	Alphanumeric and graphical
Lost Target Alarm (6.4.7)	Function ON/OFF Lost target Filter Criteria	Function ON/OFF Lost target Filter Criteria	Alphanumeric and graphical
Target Association (6.4.8)	Function ON/OFF Association Criteria Default Target Priority	Function ON/OFF Association Criteria Default Target Priority	Alphanumeric

6.4.10 Trial manoeuvre

A trial manoeuvre simulation should be clearly identified by the relevant symbol positioned astern of own ship within the operational display area of the screen.

7 OPERATIONAL DISPLAYS

7.1 General

7.1.1 If the display equipment is capable of supporting the presentation of multiple functions then there should be a clear indication of the primary function supported by the presentation (e.g. Radar, ECDIS). It should be possible to select the Radar presentation (see 7.2) or the ECDIS presentation (see 7.3) by a simple operator action.

7.1.2 If a radar image and an electronic chart are displayed together, the chart and the radar image should use a consistent common reference point and match in scale, projection and orientation. Any offset should be indicated.

7.1.3 Range scales of 0.25, 0.5, 0.75, 1.5, 3, 6, 12 and 24 NM should be provided. Additional range scales are permitted. These range scales do not apply when presenting raster chart data. The range scale should be permanently indicated.

7.1.4 When range rings are displayed, the range ring scale should be indicated.

7.1.5 No part of the operational display area should be permanently used for presentation of information that is not part of the navigation presentation (e.g. pop up displays, drop down menus and information windows). Temporary, limited and relevant alphanumeric data may be displayed adjacent to a selected symbol, graphic or target within the operational display area.

7.2 Radar display

7.2.1 General

7.2.1.1 Radar video, tracked radar targets and AIS targets should not be substantially degraded, masked or obscured by other presented information.

7.2.1.2 It should be possible to temporarily suppress all graphical information from the display, retaining only radar video and trails.

7.2.1.3 The brightness of radar echoes and associated graphic symbols for tracked radar targets should be variable. It should be possible to control the brightness of all displayed information. There should be independent means to adjust the brightness of groups of displayed graphics and alphanumeric data. The brilliance of the heading line should not be variable to extinction.

7.2.2 Display of chart information on radar

7.2.2.1 Vector chart information may be displayed on a radar presentation. This should be accomplished using layers selected from the chart database. As a minimum, the elements of the ECDIS Standard Display should be available for individual selection by category or layer, but not as individual objects. As far as practical, chart information should be presented in accordance with the ECDIS performance standards and with these presentation standards.

7.2.2.2 If chart information is displayed within the operational display area, the display of radar information should have priority. The chart information should be clearly perceptible as such. The chart information should not substantially degrade, mask or obscure the radar video, tracked radar targets and AIS targets.

7.2.2.3 When chart information is displayed, there should be a permanent indication of its status. Source and update information should also be made available.

7.2.3 Display of maps on radar

Map graphics may be displayed, but should not substantially degrade, mask or obscure the radar video, tracked radar targets and AIS targets.

7.3 ECDIS display

7.3.1 General

7.3.1.1 The ENC and all updates to it should be displayed without any degradation of their information content.

7.3.1.2 Chart information should not be substantially degraded, masked or obscured by other presented information.

7.3.1.3 It should be possible to temporarily suppress all supplemental information from the display, retaining only chart related information contained in the Display Base.

7.3.1.4 It should be possible to add or remove information from the ECDIS display. It should not be possible to remove information contained in the Display Base from the ECDIS display.

7.3.1.5 It should be possible to select a safety contour from the depth contours provided by the ENC. The safety contour should be emphasized over other contours on the display.

7.3.1.6 It should be possible to select a safety depth. Soundings equal to or less than the safety depth should be emphasized whenever spot soundings are selected for display.

7.3.1.7 An indication should be provided if the information is displayed at a larger scale than that contained in the ENC, or if own ship's position is covered by an ENC at a larger scale than that provided by the display.

7.3.1.8 Overscaled areas shown on the ECDIS display should be identified.

7.3.2 Display of radar information on ECDIS

7.3.2.1 Radar and target information may be displayed on ECDIS but should not substantially degrade, mask or obscure the chart information. As far as practical, radar and target information should be presented in accordance with the radar performance standard and with these presentation standards.

7.3.2.2 Radar and target information should be clearly distinguishable from the chart information. It should be possible to remove this information by a simple operator action.

7.3.3 Display of additional information on ECDIS

7.3.3.1 Information from additional sources may be displayed on ECDIS but should not substantially degrade, mask or obscure the chart information.

7.3.3.2 Additional information should be clearly distinguishable from the chart information. It should be possible to remove this information by a simple operator action.

7.4 User selected (task orientated) presentation

7.4.1 The user may configure a presentation for a specific task at hand. The presentation may include radar and/or chart information, in combination with other navigation or ship related data. When not fully compliant with the Radar or ECDIS performance standards, such a presentation should be identified as an auxiliary presentation.

7.4.2 As far as practical, the presentation of any radar and/or ECDIS related functions should be compliant with the requirements of the relevant performance standards and of these presentation standards, with the exception of size requirements for the operational area. Chartlets or windows of radar information may be presented along with other information associated with the task at hand.

8 PHYSICAL REQUIREMENTS

8.1 Display adjustment

8.1.1 It should be possible to adjust the contrast and brightness of the display provided, as applicable to the display technology. It should be possible to dim the display. The range of control should permit the display to be legible under all ambient light conditions.

8.1.2 It should be possible for the navigator to reset the values of contrast and/or brightness to a preset or default condition.

8.1.3 Where magnetic fields degrade the presentation of navigation information, a means to neutralise the effect of magnetic fields should be provided.

8.2 Screen size

8.2.1 Display equipment should be of sufficient size to support the requirements of the relevant performance standards adopted by the Organization.

8.2.2 The operational display area of the chart presentation for route monitoring should be at least 270 x 270 mm.

8.2.3 The operational display area of the radar presentation should be at least a circle of diameter of:

- 180 mm for ships smaller than 500 gross tonnage;
- 250 mm for ships larger than 500 gross tonnage and HSC less than 10,000 gross tonnage;
- 320 mm for ships larger than 10,000 gross tonnage.

8.3 Colours

8.3.1 Multicoloured display equipment should be used except where monochrome displays are permitted within individual performance standards adopted by the Organization.

8.3.2 Multicoloured operational displays including multifunction displays (e.g. conning displays) should provide a minimum of 64 colours except where permitted or not required by the Organization, or when used for a single specific purpose (e.g. speed log, echo-sounder).

8.4 Screen resolution

Operational display equipment including multifunction displays (e.g. conning displays) should provide a minimum screen resolution of 1280 x 1024, or equivalent for a different aspect ratio, except where permitted or not required by the Organization, or when used for a single specific purpose (e.g. speed log, echo-sounder).

8.5 Screen viewing angle

The display should support the reading of information under all ambient light conditions, simultaneously, by at least two users, from standing and sitting operator positions likely to be found on the bridge of a ship.

Appendix

DEFINITIONS

Activated AIS target	A target representing the automatic or manual activation of a sleeping target for the display of additional graphically presented information.
AIS target	A target generated from an AIS message.
Associated target	A target simultaneously representing a tracked radar target and AIS target having similar parameters (e.g. position, course, speed) and which comply with an association algorithm.
CCRP	The Consistent Common Reference Point is a location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.
Dangerous target	A target with a predicted CPA and TCPA that violates values preset by the operator. The respective target is marked by a “dangerous target” symbol.
Display Base	The level of information which cannot be removed from the ECDIS display, consisting of information which is required at all times in all geographic areas and all circumstances. It is not intended to be sufficient for safe navigation.
ENC	Electronic Navigational Chart. The database standardized as to content, structure and format according to relevant IHO standards and issued by, or on the authority of, a Government.
Heading	Direction in which the bow of a ship is pointing expressed as an angular displacement from north.
Important Indication	A marking of an operational status of displayed information which needs special attention, e.g. information with low integrity or invalid information.
Lost target	A target representing the last valid position of a target before its data was lost. The target is displayed by a “lost target” symbol.

Operational Display Area	Area of the display used to graphically present chart and radar information, excluding the user dialog area. On the chart display this is the area of the chart presentation. On the radar display this is the area encompassing the radar image.
Past positions	Equally time-spaced past position marks of a tracked or reported target and own ship. The co-ordinates used to display past positions may be either relative or true.
Sleeping AIS target	A target indicating the presence and orientation of a vessel equipped with AIS in a certain location. The target is displayed by a “sleeping target” symbol. No additional information is presented until activated.
Selected target	A target selected manually for the display of detailed alphanumeric information in a separate data display area. The target is displayed by a “selected target” symbol.
Standard Display	The level of information that should be shown when a chart is first displayed on ECDIS. The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner’s needs.
Trial manoeuvre	Facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes, by displaying the predicted future status of all tracked and AIS targets as a result of own ship’s simulated manoeuvres.
User Dialog Area	An area of the display consisting of data fields and/or menus that is allocated to the interactive presentation and entry or selection of operational parameters, data and commands mainly in alphanumeric form.
User Selected Presentation	An auxiliary presentation configured by the user for a specific task at hand. The presentation may include radar and/or chart information, in combination with other navigation or ship related data.

ANNEX 7**DRAFT SN CIRCULAR ON GUIDELINES FOR THE PRESENTATION OF
NAVIGATION-RELATED SYMBOLS, TERMS AND ABBREVIATIONS**

1 The Sub-Committee on Safety of Navigation (NAV), at its fiftieth session (5 to 9 July 2004), agreed on guidelines for the presentation of navigation-related symbols, given in annex 1, and terms and abbreviations, given in annex 2, also agreed that they should be used for the display of navigation-related information on all shipborne navigational equipment and systems in consistent and uniform manner.

2 The Maritime Safety Committee, at its [seventy-ninth session (1 to 10 December 2004)], concurred with the Sub-Committee's views, approved the annexed Guidelines and encouraged their use for all shipborne navigational systems and equipment.

3 Member Governments are invited to bring the annexed guidelines to the attention of all concerned.

ANNEX 1

Guidelines for the Presentation of Navigation-related Symbols

1 Purpose

The purpose of these annexed guidelines is to provide guidance on the appropriate use of navigation-related symbols to achieve a harmonized and consistent presentation.

2 Scope

The use of these guidelines will insure that the symbols used for the display of navigation-related information on all shipborne navigational systems and equipment are presented in a consistent and uniform manner.

3 Application

These guidelines apply to all shipborne navigational systems and equipment. The symbols listed in the appendix should be used for the display of navigation-related information to promote consistency in the symbol presentation on navigational equipment.

The symbols listed in the Appendix should replace symbols which are currently contained in existing performance standards. Where a standard symbol is not available, another symbol may be used, but this symbol should not conflict with the symbols listed in the appendix.

APPENDIX

Navigation-related Symbols

Table 1: Own Ship Symbols


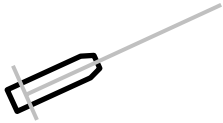
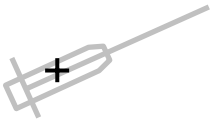
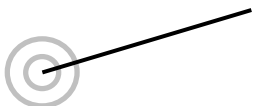

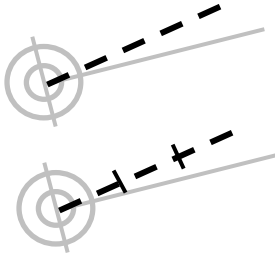
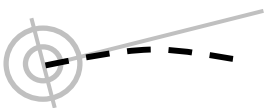
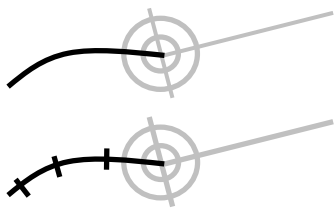
Topic	Symbol	Description
Own ship		Double circle, located at own ship's reference position. Use of this symbol is optional, if own ship position is shown by the combination of Heading Line and Beam Line.
Own Ship True scale outline		True scale outline located relative to own ship's reference position, oriented along own ship's heading. Used on small ranges/large scales.
Own Ship Radar Antenna Position		Cross, located on a true scale outline of the ship at the physical location of the radar antenna that is the current source of displayed radar video.
Own Ship Heading line		Solid line thinner than the speed vector line style, drawn to the bearing ring or of fixed length, if the bearing ring is not displayed. Origin is at own ship's reference point.
Own Ship Beam line		Solid line of fixed length; optionally length variable by operator. Midpoint at own ship's reference point.
Own Ship Speed vector		Dashed line – short dashes with spaces approximately twice the line width of heading line. Time increments between the origin and endpoint may optionally be marked along the vector using short intersecting lines. To indicate Water/Ground stabilization optionally one arrowhead for water stabilization and two arrowheads for ground stabilization may be added.
Own Ship Path prediction		A curved vector may be provided as a path predictor.
Own Ship Past Track		Thick line for primary source. Thin line for secondary source. Optional time marks are allowed.

Table 2: Tracked Radar Target Symbols

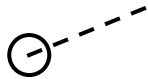





Topic	Symbol	Description
Tracked Target including Dangerous Target		<p>Solid filled or unfilled circle located at target position.</p> <p>The course and speed vector should be displayed as dashed line, with short dashes with spaces approximately twice the line width.</p> <p>Optionally, time increments, may be marked along the vector.</p> <p>For a “Dangerous Target”, bold, red (on colour display) solid circle with course and speed vector, flashing until acknowledged.</p>
Target in Acquisition State		<p>Circle segments in the acquired target state.</p> <p>For automatic acquisition, bold circle segments, flashing and red (on colour display) until acknowledged.</p>
Lost Target		<p>Bold lines across the circle, flashing until acknowledged.</p>
Selected Target		<p>A square indicated by its corners centred around the target symbol.</p>
Target Past Positions		<p>Dots, equally spaced by time.</p>
Tracked Reference Target		<p>Large R adjacent to designated tracked target.</p> <p>Multiple reference targets should be marked as R1, R2, R3, etc.</p>

Table 3: AIS Target Symbols


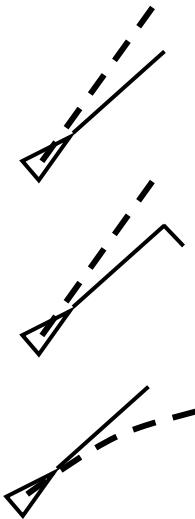
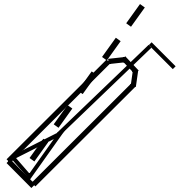
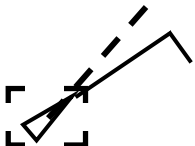

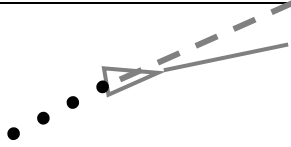


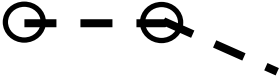

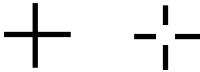

Topic	Symbol	Description
AIS Target (sleeping)		An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle. The symbol of the sleeping target should be smaller than that of the activated target.
Activated AIS Target Including Dangerous Target		<p>An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle.</p> <p>The COG/SOG vector should be displayed as a dashed line with short dashes with spaces approximately twice the line width. Optionally, time increments may be marked along the vector.</p> <p>The heading should be displayed as a solid line thinner than speed vector line style, length twice of the length of the triangle symbol. Origin of the heading line is the apex of the triangle.</p> <p>The turn should be indicated by a flag of fixed length added to the heading line.</p> <p>A path predictor may be provided as curved vector.</p> <p>For a “Dangerous AIS Target”, bold, red (on colour display) solid triangle with course and speed vector, flashing until acknowledged.</p>
AIS Target – True Scale Outline		<p>A true scale outline may be added to the triangle symbol. It should be:</p> <p>Located relative to reported position and according to reported position offsets, beam and length. Oriented along target’s heading.</p> <p>Used on low ranges/large scales.</p>
Selected target		A square indicated by its corners should be drawn around the activated target symbol.
Lost target		<p>Triangle with bold solid cross. The triangle should be oriented per last known value. The cross should have a fixed orientation. The symbol should flash until acknowledged.</p> <p>The target should be displayed without vector, heading and rate of turn indication.</p>
Target Past Positions		Dots, equally spaced by time.

Table 4: Other Symbols

Topic	Symbol	Description
AIS Based AtoN Real Position of Charted Object		Diamond with crosshair centred at reported position. (Shown with chart symbol. Chart symbol not required for radar.)
AIS Based AtoN Virtual position		Diamond with crosshair centred at reported position.
Monitored Route		Dashed bold line, waypoints (WPT) as circles.
Planned or Alternate Route		Dotted line, WPT as circles.
Trial Manoeuvre	T	Large T on screen.
Simulation Mode	S	Large S on screen.
Cursor		Crosshair (two alternatives, one with open centre).
Range Rings		Solid circles.
Variable Range Markers (VRM)		Circle. Additional VRM should be distinguishable from the primary VRM.
Electronic Bearing Lines (EBL)		Dashed line. Additional EBL should be distinguishable from the primary EBL.

Topic	Symbol	Description
Acquisition/ Activation Area		Solid line boundary for an area.
Event Mark		Rectangle with diagonal line, clarified by added text (e.g. “MOB” for man overboard cases).

ANNEX 2

Guidelines for the Presentation of Navigation-related Terms and Abbreviations

1 Purpose

The purpose of these guidelines is to provide guidance on the use of appropriate navigation-related terminology and abbreviations intended for presentation on shipborne navigational displays. These are based on terms and abbreviations used in existing navigation references.

2 Scope

These guidelines are issued to ensure that the terms and abbreviations used for the display of navigation-related information on all shipborne navigation equipment and systems are consistent and uniform.

3 Application

These guidelines apply to all shipborne navigational systems and equipment including, radar, ECDIS, AIS, INS and IBS. When navigation-related information is displayed as text, the standard terms or abbreviations listed in the Appendix should be used, instead of using terms and abbreviations which are currently contained in existing performance standards.

Where a standard term and abbreviation is not available, another term or abbreviation may be used. This term or abbreviation should not conflict with the standard terms or abbreviations listed in the Appendix and provide a clear meaning. Standard marine terminology should be used for this purpose. When the meaning is not clear from its context, the term should not be abbreviated.

Unless otherwise specified, standard terms should be shown in lower case while abbreviations should be presented using upper case.

APPENDIX

List of Standard Terms and Abbreviations

Term	Abbreviation	Abbreviation	Term
Acknowledge	ACK	ACK	Acknowledge
Acquire, Acquisition	ACQ	ACQ	Acquire, Acquisition
Acquisition Zone	AZ	ADJ	Adjust, Adjustment
Adjust, Adjustment	ADJ	AFC	Automatic Frequency Control
Aft	AFT	AFT	Aft
Alarm	ALARM	AGC	Automatic Gain Control
Altitude	ALT	AIS	Automatic Identification System
Amplitude Modulation	AM	ALARM	Alarm
Anchor Watch	ANCH	ALT	Altitude
Antenna	ANT	AM	Amplitude Modulation
Anti Clutter Rain	RAIN	ANCH	Anchor Watch
Anti Clutter Sea	SEA	ANCH	Vessel at Anchor (applies to AIS)
April	APR	ANT	Antenna
Audible	AUD	APR	April
August	AUG	AUD	Audible
Automatic	AUTO	AUG	August
Automatic Frequency Control	AFC	AUTO	Automatic
Automatic Gain Control	AGC	AUX	Auxiliary System/Function
Automatic Identification System	AIS	AVAIL	Available
Auxiliary System/Function	AUX	AZ	Acquisition Zone
Available	AVAIL	BITE	Built in Test Equipment
Background	BKGND	BKGND	Background
Bearing	BRG	BRG	Bearing
Bearing Waypoint To Waypoint	BWW	BRILL	Brilliance
Brilliance	BRILL	BWW	Bearing Waypoint To Waypoint
Built in Test Equipment	BITE	C	Carried (e.g. carried EBL origin)
Calibrate	CAL	C UP (See note 2)	Course Up
Cancel	CNCL	CAL	Calibrate
Carried (e.g. carried EBL origin)	C	CCRP	Consistent Common Reference Point
Centre	CENT	CCRS	Consistent Common Reference System
Change	CHG	CENT	Centre
Circular Polarised	CP	CHG	Change
Clear	CLR	CLR	Clear
Closest Point of Approach	CPA	CNCL	Cancel
Consistent Common Reference Point	CCRP	COG	Course Over the Ground
Consistent Common Reference System	CCRS	CONT	Contrast
Contrast	CONT	CORR	Correction
Correction	CORR	CP	Circular Polarised
Course	CRS	CPA	Closest Point of Approach
Course Over the Ground	COG	CRS	Course
Course Through the Water	CTW	CTS	Course To Steer
Course To Steer	CTS	CTW	Course Through the Water
Course Up	C UP (See note 2)	CURS	Cursor
Cross Track Distance	XTD	D	Dropped (e.g. dropped EBL origin)
Cursor	CURS	DATE	Date
Dangerous Goods	DG	DAY/NT	Day/Night
Date	DATE	DEC	December

Term	Abbreviation
Day/Night	DAY/NT
Dead Reckoning, Dead Reckoned Position	DR
December	DEC
Decrease	DECR
Delay	DELAY
Delete	DEL
Departure	DEP
Depth	DPTH
Destination	DEST
Deviation	DEV
Differential Galileo	DGAL ^(See note 2)
Differential GLONASS	DGLONASS ^(See note 2)
Differential GNSS	DGNSS ^(See note 2)
Differential GPS	DGPS ^(See note 2)
Digital Selective Calling	DSC
Display	DISP
Distance	DIST
Distance Root Mean Square	DRMS ^(See note 2)
Distance To Go	DTG
Drift	DRIFT
Dropped (e.g. dropped EBL origin)	D
East	E
Electronic Bearing Line	EBL
Electronic Chart Display and Information System	ECDIS
Electronic Navigational Chart	ENC
Electronic Position Fixing System	EPFS
Electronic Range and Bearing Line	ERBL
Enhance	ENH
Enter	ENT
Equipment	EQUIP
Error	ERR
Estimated Position	EP
Estimated Time of Arrival	ETA
Estimated Time of Departure	ETD
Event	EVENT
Exclusion Zone	EZ
External	EXT
February	FEB
Fishing Vessel	FISH
Fix	FIX
Forward	FWD
Frequency	FREQ
Frequency Modulation	FM
Full	FULL
Gain	GAIN
Galileo	GAL
Geometric Dilution Of Precision	GDOP

Abbreviation	Term
DECR	Decrease
DEL	Delete
DELAY	Delay
DEP	Departure
DEST	Destination
DEV	Deviation
DG	Dangerous Goods
DGAL ^(See note 2)	Differential Galileo
DGLONASS ^(See note 2)	Differential GLONASS
DGNSS ^(See note 2)	Differential GNSS
DGPS ^(See note 2)	Differential GPS
DISP	Display
DIST	Distance
DIVE	Vessel Engaged in Diving Operations (applies to AIS)
DPTH	Depth
DR	Dead Reckoning, Dead Reckoned Position
DRG	Vessel Engaged in Dredging or Underwater Operations (applies to AIS)
DRIFT	Drift
DRMS ^(See note 2)	Distance Root Mean Square
DSC	Digital Selective Calling
DTG	Distance To Go
E	East
EBL	Electronic Bearing Line
ECDIS	Electronic Chart Display and Information System
ENC	Electronic Navigational Chart
ENH	Enhance
ENT	Enter
EP	Estimated Position
EPFS	Electronic Position Fixing System
EQUIP	Equipment
ERBL	Electronic Range and Bearing Line
ERR	Error
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
EVENT	Event
EXT	External
EZ	Exclusion Zone
FEB	February
FISH	Fishing Vessel
FIX	Fix
FM	Frequency Modulation
FREQ	Frequency
FULL	Full
FWD	Forward
GAIN	Gain
GAL	Galileo
GC	Great Circle

Term	Abbreviation
Global Maritime Distress and Safety System	GMDSS
Global Navigation Satellite System	GNSS
Global Orbiting Navigation Satellite System	GLONASS
Global Positioning System	GPS
Great Circle	GC
Grid	GRID
Ground	GND
Group Repetition Interval	GRI
Guard Zone	GZ
Gyro	GYRO
Harmful Substances (applies to AIS)	HS
Head Up	H UP (See note 2)
Heading	HDG
Heading Control System	HCS
Heading Line	HL
High Frequency	HF
High Speed Craft (applies to AIS)	HSC
Horizontal Dilution Of Precision	HDOP
Identification	ID
In	IN
Increase	INCR
Indication	IND
Information	INFO
Infrared	INF RED
Initialisation	INIT
Input	INP
Input/Output	I/O
Integrated Radio Communication System	IRCS
Interference Rejection	IR
Interswitch	ISW
Interval	INT
January	JAN
July	JUL
June	JUN
Latitude	LAT
Limit	LIM
Line Of Position	LOP
Log	LOG
Long Pulse	LP
Long Range	LR
Longitude	LON
Loran	LORAN
Lost Target	LOST TGT
Low Frequency	LF
Magnetic	MAG
Manoeuvre	MVR
Manual	MAN
Map(s)	MAP
March	MAR

Abbreviation	Term
GDOP	Geometric Dilution Of Precision
GLONASS	Global Orbiting Navigation Satellite System
GMDSS	Global Maritime Distress and Safety System
GND	Ground
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRI	Group Repetition Interval
GRID	Grid
GRND	Vessel Aground (applies to AIS)
GYRO	Gyro
GZ	Guard Zone
H UP (See note 2)	Head Up
HCS	Heading Control System
HDG	Heading
HDOP	Horizontal Dilution Of Precision
HF	High Frequency
HL	Heading Line
HS	Harmful Substances (applies to AIS)
HSC	High Speed Craft (applies to AIS)
I/O	Input/Output
ID	Identification
IN	In
INCR	Increase
IND	Indication
INF RED	Infrared
INFO	Information
INIT	Initialisation
INP	Input
INT	Interval
IR	Interference Rejection
IRCS	Integrated Radio Communication System
ISW	Interswitch
JAN	January
JUL	July
JUN	June
LAT	Latitude
LF	Low Frequency
LIM	Limit
LOG	Log
LON	Longitude
LOP	Line Of Position
LORAN	Loran
LOST TGT	Lost Target
LP	Long Pulse
LR	Long Range
MAG	Magnetic
MAN	Manual
MAP	Map(s)
MAR	March

Term	Abbreviation
Maritime Mobile Services Identity number	MMSI
Maritime Pollutant (applies to AIS)	MP
Maritime Safety Information	MSI
Marker	MKR
Master	MSTR
Maximum	MAX
May	MAY
Medium Frequency	MF
Medium Pulse	MP
Menu	MENU
Minimum	MIN
Missing	MISSING
Mute	MUTE
Navigation	NAV
Normal	NORM
North	N
North Up	N UP (See note 2)
November	NOV
October	OCT
Off	OFF
Officer On Watch	OOW
Offset	OFFSET
On	ON
Out/Output	OUT
Own Ship	OS
Panel Illumination	PANEL
Parallel Index Line	PI
Passenger Vessel (applies to AIS)	PASSV
Performance Monitor	MON
Permanent	PERM
Person Overboard	POB
Personal Identification Number	PIN
Pilot Vessel (applies to AIS)	PILOT
Port/Portside	PORT
Position	POSN
Positional Dilution Of Precision	PDOP
Power	PWR
Predicted	PRED
Predicted Area of Danger	PAD
Predicted Point of Collision	PPC
Pulse Length	PL
Pulse Modulation	PM
Pulse Repetition Frequency	PRF
Pulse Repetition Rate	PRR
Pulses Per Revolution	PPR
Racon	RACON
Radar	RADAR
Radius	RAD
Rain	RAIN
Range	RNG
Range Rings	RR
Raster Chart Display System	RCDS

Abbreviation	Term
MAX	Maximum
MAY	May
MENU	Menu
MF	Medium Frequency
MIN	Minimum
MISSING	Missing
MKR	Marker
MMSI	Maritime Mobile Services Identity number
MON	Performance Monitor
MP	Maritime Pollutant (applies to AIS)
MP	Medium Pulse
MSI	Maritime Safety Information
MSTR	Master
MUTE	Mute
MVR	Manoeuvre
N	North
N UP (See note 2)	North Up
NAV	Navigation
NORM	Normal
NOV	November
NUC	Vessel Not Under Command (applies to AIS)
OCT	October
OFF	Off
OFFSET	Offset
ON	On
OOW	Officer On Watch
OS	Own Ship
OUT	Out/Output
PAD	Predicted Area of Danger
PANEL	Panel Illumination
PASSV	Passenger Vessel (applies to AIS)
PDOP	Positional Dilution Of Precision
PERM	Permanent
PI	Parallel Index Line
PILOT	Pilot Vessel (applies to AIS)
PIN	Personal Identification Number
PL	Pulse Length
PM	Pulse Modulation
POB	Person Overboard
PORT	Port/Portside
POSN	Position
PPC	Predicted Point of Collision
PPR	Pulses Per Revolution
PRED	Predicted
PRF	Pulse Repetition Frequency
PRR	Pulse Repetition Rate
PWR	Power
RACON	Racon
RAD	Radius
RADAR	Radar
RAIM	Receiver Autonomous Integrity Monitoring
RAIN	Anti Clutter Rain

Term	Abbreviation
Raster Navigational Chart	RNC
Rate Of Turn	ROT
Real-time Kinematic	RTK
Receiver	RX ^(See note 2)
Receiver Autonomous Integrity Monitoring	RAIM
Reference	REF
Relative	REL ^(See note 3)
Relative Motion	RM
Revolutions per Minute	RPM
Roll On/Roll Off Vessel (applies to AIS)	RoRo
Root Mean Square	RMS
Route	ROUTE
Safety Contour	SF CNT
Sailing Vessel (applies to AIS)	SAIL
Satellite	SAT
S-Band (applies to Radar)	S-BAND
Scan to Scan	SC/SC
Search And Rescue Transponder	SART
Search And Rescue Vessel (applies to AIS)	SARV
Select	SEL
September	SEP
Sequence	SEQ
Set (i.e., set and drift, or setting a value)	SET
Ship's Time	TIME
Short Pulse	SP
Signal to Noise Ratio	SNR
Simulation	SIM ^(See note 4)
Slave	SLAVE
South	S
Speed	SPD
Speed and Distance Measuring Equipment	SDME
Speed Over the Ground	SOG
Speed Through the Water	STW
Stabilized	STAB
Standby	STBY
Starboard/Starboard Side	STBD
Station	STN
Symbol(s)	SYM
Synchronisation	SYNC
Target	TGT
Target Tracking	TT
Test	TEST
Time	TIME
Time Difference	TD
Time Dilution Of Precision	TDOP
Time Of Arrival	TOA
Time Of Departure	TOD
Time to CPA	TCPA
Time To Go	TTG
Time to Wheel Over Line	TWOL

Abbreviation	Term
RAIN	Rain
RCDS	Raster Chart Display System
REF	Reference
REL ^(See note 3)	Relative
RIM	Vessel Restricted in Manoeuvrability) (applies to AIS)
RM	Relative Motion
RMS	Root Mean Square
RNC	Raster Navigational Chart
RNG	Range
RoRo	Roll On/Roll Off Vessel (applies to AIS)
ROT	Rate Of Turn
ROUTE	Route
RPM	Revolutions per Minute
RR	Range Rings
RTK	Real-time Kinematic
RX ^(See note 2)	Receiver
S	South
SAIL	Sailing Vessel (applies to AIS)
SART	Search And Rescue Transponder
SARV	Search And Rescue Vessel (applies to AIS)
SAT	Satellite
S-BAND	S-Band (applies to Radar)
SC/SC	Scan to Scan
SDME	Speed and Distance Measuring Equipment
SEA	Anti Clutter Sea
SEL	Select
SEP	September
SEQ	Sequence
SET	Set (i.e., set and drift, or setting a value)
SF CNT	Safety Contour
SIM ^(See note 4)	Simulation
SLAVE	Slave
SNR	Signal to Noise Ratio
SOG	Speed Over the Ground
SP	Short Pulse
SPD	Speed
STAB	Stabilized
STBD	Starboard/Starboard Side
STBY	Standby
STN	Station
STW	Speed Through the Water
SYM	Symbol(s)
SYNC	Synchronisation
T	True
TCPA	Time to CPA
TCS	Track Control System
TD	Time Difference
TDOP	Time Dilution Of Precision
TEST	Test
TGT	Target

Term	Abbreviation
Track	TRK
Track Control System	TCS
Track Made Good	TMG ^(See note 5)
Trail(s)	TRAIL
Transceiver	TXRX ^(See note 2)
Transferred Line Of Position	TPL
Transmitter	TX ^(See note 2)
Transmitting Heading Device	THD
Trial	TRIAL ^(See note 4)
Trigger Pulse	TRIG
True	T
True Motion	TM
Tune	TUNE
Ultrahigh Frequency	UHF
Universal Time, Coordinated	UTC
Unstabilised	UNSTAB
Variable Range Marker	VRM
Variation	VAR
Vector	VECT
Very High Frequency	VHF
Very Low Frequency	VLF
Vessel Aground (applies to AIS)	GRND
Vessel at Anchor (applies to AIS)	ANCH
Vessel Constrained by Draught (applies to AIS)	VCD
Vessel Engaged in Diving Operations (applies to AIS)	DIVE
Vessel Engaged in Dredging or Underwater Operations (applies to AIS)	DRG
Vessel Engaged in Towing Operations (applies to AIS)	TOW
Vessel Not Under Command (applies to AIS)	NUC
Vessel Restricted in Manoeuvrability) (applies to AIS)	RIM
Vessel Traffic Service	VTs
Vessel Underway Using Engine (applies to AIS)	UWE
Video	VID
Voyage	VOY
Voyage Data Recorder	VDR
Warning	WARNING
Water	WAT
Waypoint	WPT
West	W
Wheel Over Line	WOL
Wheel Over Time	WOT
X-Band (applies to Radar)	X-BAND

Abbreviation	Term
THD	Transmitting Heading Device
TIME	Ship's Time
TIME	Time
TM	True Motion
TMG ^(See note 5)	Track Made Good
TOA	Time Of Arrival
TOD	Time Of Departure
TOW	Vessel Engaged in Towing Operations (applies to AIS)
TPL	Transferred Line Of Position
TRAIL	Trail(s)
TRIAL ^(See note 4)	Trial
TRIG	Trigger Pulse
TRK	Track
TT	Target Tracking
TTG	Time To Go
TUNE	Tune
TWOL	Time to Wheel Over Line
TX ^(See note 2)	Transmitter
TXRX ^(See note 2)	Transceiver
UHF	Ultrahigh Frequency
UNSTAB	Unstabilised
UTC	Universal Time, Coordinated
UWE	Vessel Underway Using Engine (applies to AIS)
VAR	Variation
VCD	Vessel Constrained by Draught (applies to AIS)
VDR	Voyage Data Recorder
VECT	Vector
VHF	Very High Frequency
VID	Video
VLF	Very Low Frequency
VOY	Voyage
VRM	Variable Range Marker
VTs	Vessel Traffic Service
W	West
WARNING	Warning
WAT	Water
WOL	Wheel Over Line
WOT	Wheel Over Time
WPT	Waypoint
X-BAND	X-Band (applies to Radar)
XTD	Cross Track Distance

List of Standard Units of Measurement and Abbreviations

Unit	Abbreviation	Abbreviation	Unit
cable length	cbl	cbl	cable length
cycles per second	cps	cps	cycles per second
degree(s)	deg	deg	degree(s)
fathom(s)	fm	fm	fathom(s)
feet/foot	ft	ft	feet/foot
gigaHertz	GHz	GHz	gigaHertz
hectoPascal	hPa	hPa	hectoPascal
Hertz	Hz	Hz	Hertz
hour(s)	hr(s)	hr(s)	hour(s)
kiloHertz	kHz	kHz	kiloHertz
kilometre	km	km	kilometre
kiloPascal	kPa	kPa	kiloPascal
knot(s)	kn	kn	knot(s)
megaHertz	MHz	MHz	megaHertz
minute(s)	min	min	minute(s)
Nautical Mile(s)	NM	NM	Nautical Mile(s)

Notes:

- Terms and abbreviations used in nautical charts are published in relevant IHO publications and are not listed here.
- In general, terms should be presented using lower case text and abbreviations should be presented using upper case text. Those abbreviations that may be presented using lower case text are identified in the list, e.g. “dGNSS” or “Rx”.
- Abbreviations may be combined, e.g. “CPA LIM” or “T CRS”. When the abbreviation for the standard term “Relative” is combined with another abbreviation, the abbreviation “R” should be used instead of “REL”, e.g. “R CRS”.
- The use of the abbreviations “SIM” and “TRIAL” are not intended to replace the appropriate symbols listed in annex 1.
- The term “Course Made Good” has been used in the past to describe “Track Made Good”. This is a misnomer in that “courses” are directions steered or intended to be steered with respect to a reference meridian. “Track Made Good” is preferred over the use of “Course Made Good”.
- Where information is presented using SI units, the respective abbreviations should be used.

ANNEX 8

DRAFT REVISED TEXT OF CHAPTER X OF THE DRAFT FISHING VESSEL
SAFETY CODECHAPTER X
SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS**10.1 Shipborne navigational equipment**^{* 317}

10.1.1 Vessels should be fitted with:

- .1 a standard magnetic compass, except as provided in 10.1.5;
- .2 adequate means of communication between the standard compass position and the normal navigation control position to the satisfaction of the competent authority; and
- .3 means for taking bearings as nearly as practicable over an arc of the horizon of 360°.³¹⁸

10.1.2 The magnetic compass referred to in 10.1.1 should be properly adjusted and its table or curve of residual deviations should be available at all times.³¹⁹

10.1.3 A spare magnetic compass, interchangeable with the standard compass, should be carried by vessels of 35m in length and over, unless a steering compass or a gyro-compass is fitted.³²⁰

10.1.4 It should be possible to read the compasses by day and by night. It should also be possible to take bearings by day or by night using the standard or steering compass or a pelorus. Magnetic compasses should be provided with means for adjustment; securing devices for compasses and compensators should be made of non magnetic materials. Compasses should be sited as near the fore-and-aft line of the vessel as practicable, with the lubber line, as accurately as possible, parallel with the fore-and-aft line. Compasses should comply with the requirements of the competent authority.³²¹

* See the Recommendation on the Carriage of Electronic Position-Fixing Equipment adopted by the Organization by resolution A.156(ES.IV) and the World-Wide Radionavigation System adopted by the Organization by resolution A.953(23).

³¹⁷ Please refer to paragraph 10.1.1 of the existing Code.

³¹⁸ Please refer to regulation X/3(1)(a) of the Protocol.

³¹⁹ Please refer to regulation X/3(1)(b) of the Protocol.

³²⁰ Please refer to regulation X/3(1)(c) of the Protocol.

³²¹ Please refer to paragraph 10.1.2 of the existing Code and to paragraph 9.2.2 of the existing Guidelines.

10.1.5 The competent authority, if it considers it unreasonable or unnecessary to require a standard magnetic compass, may exempt individual vessels or classes of vessels from these requirements if the nature of the voyage, the vessel's proximity to land or the type of vessel does not warrant a standard compass, provided that a suitable steering compass is in all cases carried.³²²

10.1.6 Vessels of 45 m in length and over should be fitted with a gyro-compass complying with the following requirements:

- .1 the master gyro-compass or a gyro-repeater should be clearly readable by the helmsman at the main steering position;
- .2 on vessels of 75 m in length and over, a gyro-repeater or gyro-repeaters should be provided and should be suitably placed for taking bearings as nearly as practicable over an arc of the horizon of 360°.³²³

10.1.7 Vessels with emergency steering positions should at least be provided with a telephone or other means of communication for relaying heading information to such positions. In addition, vessels of 45 m in length and over equipped with gyro-compass should be provided with arrangements for supplying visual compass readings to the emergency steering position.³²⁴

10.1.8 In vessels equipped with an auto-pilot system actuated by a magnetic sensor, which does not indicate the vessel's heading, suitable means should be provided to show this information. Auto-pilot systems should comply with the requirements of the competent authority.³²⁵

10.1.9 Vessels of 35 m in length and over should be fitted with a radar installation. The radar installation should be capable of operating in the 9 GHz frequency band. Vessels of 35 m in length and over but less than 45 m may be exempted from compliance with the requirements of 10.1.16 at the discretion of the competent authority, provided that the equipment is fully compatible with the radar transponder for search and rescue.³²⁶

10.1.10 Facilities for plotting radar readings should be provided on the navigating bridge of vessels required by 10.1.9 to be fitted with a radar installation. In vessels of 75 m in length and over the plotting facilities should be at least as effective as a reflection plotter.

10.1.11 Vessels of 45 m in length and over should be fitted with an echo-sounding device.³²⁷

10.1.12 Vessels of less than 45 m in length should be provided with suitable means to the satisfaction of the competent authority for determining the depth of water under the vessel.³²⁸ Where fish-finding devices are fitted they could be used for that purpose.

10.1.13 Vessels of 45 m in length and over should be fitted with a device to indicate speed and distance.³²⁹

³²² Please refer to regulation X/3(1)(d) of the Protocol.

³²³ Please refer to paragraph 10.1.1 of the existing Code and to regulation X/3(3) and X/3(4) of the Protocol.

³²⁴ Please refer to regulation X/3(5) of the Protocol.

³²⁵ Please refer to paragraph 10.1.3 of the existing Code.

³²⁶ Please refer to paragraph 10.1.5 of the existing Code and to regulation X/3(6) of the Protocol.

³²⁷ Please refer to regulation X/3(9) of the Protocol.

³²⁸ Please refer to regulation X/3(10) of the Protocol.

10.1.14 Vessels of 45 m in length and over should be fitted with indicators showing the rudder angle, the rate of revolution of each propeller and in addition, if fitted with variable pitch propellers or lateral thrust propellers, the pitch and operational mode of such propellers. All these indicators should be readable from the conning position.³³⁰

10.1.15 Vessels of 75 m in length and over should be fitted with a receiver for radionavigation system, or other means, suitable for use at all times throughout the intended voyage to establish and update the ship's position by automatic means. The competent authority may exempt a vessel from this requirement if it considers it unreasonable or unnecessary for such apparatus to be carried or if the vessel is provided with other radionavigation equipment suitable for use throughout its intended voyages.³³¹

10.1.16 All equipment fitted in compliance with this section should be of a type approved at the discretion of the competent authority. Equipment installed on board vessels should conform to appropriate performance standards. Such standards wherever applicable, should not be inferior to those adopted by the Organization.^{332 *}

³²⁹ Please refer to regulation X/3(11) of the Protocol.

³³⁰ Please refer to regulation X/3(12) of the Protocol.

³³¹ Please refer to regulation X/3(14) of the Protocol.

³³² Please refer to regulation X/3(16) of the Protocol.

* See the following resolutions adopted by the Assembly of the Organization:

Recommendation on General Requirements for Shipborne Radio Equipment Forming Part of the GMDSS and for Electronic Navigational Aids (resolution A.694(17));

Recommendation on Performance Standard for Magnetic Compasses (resolution A.382(X));

Recommendation on Performance Standards for Gyro-Compasses (resolution A.424(XI));

Recommendation on Performance Standards for radar equipment (resolution MSC.64(67), annex 4);

Performance standards for automatic radar plotting aids (ARPAs) (resolution A.823(19));

Recommendation on Performance Standards for echo-sounding equipment (resolution A.224(VII), as amended by resolution MSC.74(69), annex 4);

Recommendation on Performance Standards for devices to indicate speed and distance (resolution A.824(19)), as amended by resolution MSC.96(72);

Performance Standards for Rate-of-Turn Indicators (resolution A.526(13));

Recommendation on Unification Performance Standards for Navigational Equipment (resolution A.575(14));

Recommendation on Methods of Measuring Noise Levels at Listening Posts (resolution A.343(IX));

Recommendation on Performance Standards for shipborne global positioning system receiver equipment (resolution A.819(19)), as amended by resolution MSC.112(73);

Recommendation on Performance Standards for shipborne GLONASS receiver equipment (resolution MSC.53(66)), as amended by resolution MSC.113(73);

Recommendation on Performance Standards for combined GPS/GLONASS receiver equipment (resolution MSC.74(69), annex 1), as amended by resolution MSC.115(73);

Recommendation on Performance Standards for heading control systems (resolution MSC.64(67), annex 3);

Recommendation on Performance Standards for shipborne Loran-C and Chayka receivers (resolution A.818(19));

Recommendation on Performance Standards for shipborne DGPS and DGLONASS maritime radio beacon receiver equipment (resolution MSC.64(67), annex 2), as amended by resolution MSC.114(73);

Recommendation on Performance Standards for track control systems (resolution MSC.74(69), annex 2);

Recommendation on Performance Standards for a universal shipborne automatic identification system (AIS) (resolution MSC.74(69), annex 3);

Recommendation on Performance Standards for radar reflectors (resolution A.384(X)), as amended by resolution MSC.164(78);

Recommendation on Performance Standards for sound reception systems (resolution MSC.86(70), annex 1); and

Recommendation on Performance Standards for voyage data recorders (VDRs) (resolution A.861(20)).

10.2 Nautical instruments and publications

10.2.1 Suitable nautical instruments, adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage, to the satisfaction of the competent authority, should be carried on board.³³⁵

- .1 An electronic chart display and information system (ECDIS)[†] may be accepted as meeting the chart carriage requirements of this subparagraph.
- .2 Back-up arrangements should be provided to meet the functional requirements of subparagraph .1, if this function is partly or fully fulfilled by electronic means.*

10.3 Signalling equipment

10.3.1 Attention is drawn to the need to provide the equipment to comply in every respect with the requirements of the International Regulations for Preventing Collisions at Sea, 1972, as amended.³³³

10.3.2 Lights, shapes and flags should be provided to indicate that the vessel is engaged in any specific operation for which such signals are used.³³⁴

10.3.3 A daylight signalling lamp* should be provided, the operation of which is not solely dependent upon the main source of electrical power. The power supply should in any case include a portable battery.³³⁵

10.3.4 Vessels of category 1 and vessels of 45 m in length and over should be provided with a full complement of flags and pendants to enable communications to be sent using the International Code of Signals.³³⁶

10.3.5 All vessels which are required to carry radio installations should carry the International Code of Signals.

10.3.6 The International Code of Signals should also be carried by any other vessel which, in the opinion of the competent authority, has a need to use it.³³⁷ Nevertheless, such vessels should carry at least the table of life saving signals contained in the International Code of Signals.

³³⁵ Please refer to regulation X/4 of the Protocol.

[†] Recommendation on Performance Standards for Electronic Chart Display and Information Systems (ECDIS) (resolution A.817(19)), as amended by resolutions MSC.64(67), annex 5, and MSC.86(70), annex 4, as appropriate.

* An appropriate folio of paper nautical charts may be used as a back-up arrangement for ECDIS. Other back-up arrangements for ECDIS are acceptable (see appendix 6 to resolution A.817(19), as amended).

³³³ Please refer to paragraph 10.3.1 of the existing Code and to paragraph 9.4.1 of the existing Guidelines.

³³⁴ Please refer to paragraph 10.3.2 of the existing Code.

* Recommendation on Performance Standards for daylight signalling lamps (resolution MSC.95(72)).

³³⁵ Please refer to regulation X/5(1) of the Protocol.

³³⁶ Please refer to paragraph 10.3.4 of the existing Code and to regulation X/5(2) of the Protocol.

³³⁷ Please refer to regulation X/5(3) of the Protocol.

10.4 Navigating bridge visibility³³⁸

10.4.1 Vessels of 45 m in length and over should meet the following requirements:

- .1 The view of the sea surface from the conning position should not be obscured by more than two vessel lengths, or 500 m, whichever is less, forward of the bow to 10° on either side irrespective of the vessel's draught and trim;
- .2 No blind sector caused by fishing gear or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the conning position, should exceed 10°. The total arc of blind sectors should not exceed 20°. The clear sectors between blind sectors should be at least 5°. However, in the view described in subparagraph .1 each individual blind sector should not exceed 5°;
- .3 The height of the lower edge of the navigation bridge front windows above the bridge deck should be kept as low as possible. In no case should the lower edge present an obstruction to the forward view as described in this paragraph;
- .4 The upper edge of the navigation bridge front windows should allow a forward view of the horizon for a person with a height of eye of 1,800 mm above the bridge deck at the conning position when the vessel is pitching in heavy seas. However, the competent authority, being satisfied that a 1,800 mm height of eye is unreasonable and impractical, may reduce the height of eye but not to less than 1,600 mm;
- .5 The horizontal field of vision from the conning position should extend over an arc of not less than 225°, that is from right ahead to not less than 22.5° abaft the beam on either side of the vessel;
- .6 From each bridge wing the horizontal field of vision should extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel;
- .7 From the main steering position the horizontal field of vision should extend over an arc from right ahead to at least 60° on each side of the vessel;
- .8 The vessel's side should be visible from the bridge wing; and
- .9 Windows should meet the following requirements:
 - .1 Framing between navigation bridge windows should be kept to a minimum and not be installed immediately forward of any workstation;
 - .2 To help avoid reflections, the bridge front windows should be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25°;

³³⁸ Please refer to regulation X/6 of the Protocol.

- .3 Polarized and tinted windows should not be fitted; and
- .4 A clear view through at least two of the navigating bridge front windows and depending on the bridge configuration, an additional number of clear view windows should be provided at all times regardless of weather conditions.

10.4.2 Existing vessels should, where practicable, meet the requirements of 10.4.1.1 and .2. However, structural alterations or additional equipment need not be required.

10.4.3 On vessels of unconventional design which, in the opinion of the competent authority cannot meet the requirements of this paragraph, arrangements should be provided to achieve a level of visibility that is as near as practicable to that stated in subparagraph 10.4.1.

10.5 Pilot transfer arrangements

10.5.1 Vessels engaged on voyages in the course of which pilots are likely to be employed should be provided with pilot transfer arrangements.

10.5.2 When a vessel is at sea, similar arrangements to subparagraph 10.5.1 should be provided for fisheries inspectors.

10.5.3 Such transfer arrangements should comply with standards for “Pilot transfer arrangement” set out in regulation 23, chapter V of the SOLAS Convention, 1974, as amended.

10.6 Documents

Vessels should be supplied with appropriate logs, certificates and other documents in accordance with the provisions of international and national regulations.³³⁹

³³⁹ Please refer to paragraph 10.5 of the existing Code.

ANNEX 9

DRAFT REVISED TEXT OF CHAPTER 10
OF THE DRAFT REVISED VOLUNTARY GUIDELINES

CHAPTER 10

SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS

10.1 Shipborne navigational equipment*

10.1.1 Vessels should be fitted with a standard magnetic compass, except as provided in paragraph 10.1.2. The magnetic compass should be properly adjusted and its table or curve of residual deviations should be available at all times.²⁷⁴

10.1.2 The competent authority, if it considers it unreasonable or unnecessary to require a standard magnetic compass, may exempt individual vessels or classes of vessels from these requirements if the nature of the voyage, the vessel's proximity to land or the type of vessel does not warrant a standard compass, provided that a suitable steering compass is in all cases carried.²⁷⁵

10.1.3 It should be possible to read the compass by day and by night from the steering position. Magnetic compasses should be provided with means for adjustment; securing devices for compasses and compensators should be made of non magnetic materials. Compasses should be sited as near the fore-and-aft line of the vessels as practicable, with the lubber line, as accurately as possible, parallel with the fore-and-aft line.²⁷⁶

10.1.4 In vessels equipped with an auto-pilot system actuated by a magnetic sensor, which does not indicate the vessel's heading, suitable means should be provided to show this information.²⁷⁶

10.1.5 Consideration should be given to fitting vessels with radar. In vessels where radar is fitted, the installation should be capable of operating in the 9 GHz frequency band.

10.1.6 Vessels should be provided with suitable means to the satisfaction of the competent authority for determining the depth of water under the vessel. Where fish-finding devices are fitted they could be used for that purpose.²⁷⁷

10.1.7 If practicable, every vessel should be equipped with radar reflector meeting the internationally accepted performance standards for such devices, unless the vessel is built of steel.²⁷⁸

* See the Recommendation on the Carriage of Electronic Position-Fixing Equipment adopted by the Organization by resolution A.156(ES.IV) and the World-Wide Radionavigation System adopted by the Organization by resolution A.953(23).

²⁷⁴ Please refer to regulation X/3(1), paragraphs (a)(i) and (b) of the Protocol.

²⁷⁵ Please refer to regulation X/3(1)(d) of the Protocol.

²⁷⁶ Please refer to paragraph 9.2.2 of the existing Guidelines.

²⁷⁶ Please refer to paragraph 9.2.3 of the existing Guidelines.

²⁷⁷ Please refer to paragraph 9.2.4 of the existing Guidelines.

²⁷⁸ Please refer to paragraph 9.2.6 of the existing Guidelines.

10.1.8 All equipment fitted in compliance with this section should be to the satisfaction of the competent authority.²⁸⁰

10.2 Nautical instruments and publications

10.2.1 Suitable nautical instruments, adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage, to the satisfaction of the competent authority, should be carried on board.²⁸²

- .1 An electronic chart display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this subparagraph.
- .2 Back-up arrangements should be provided to meet the functional requirements of subparagraph .1, if this function is partly or fully fulfilled by electronic means.*

10.3 Signalling equipment

10.3.1 Attention is drawn to the need to provide the equipment to comply in every respect with the requirements of the International Regulations for Preventing Collisions at Sea 1972, as amended.²⁸¹

10.3.2 Lights, shapes and flags should be provided to indicate that the vessel is engaged in any specific operation for which such signals are used.²⁸²

10.3.3 All vessels which are required to carry radio installations should carry the table of life-saving signals contained in the International Code of Signals as far as practicable.

10.4 Navigating bridge visibility

Vessels should meet the following requirements:

- .1 The view of the sea surface from the conning position should extend from right ahead to 22.5° abaft the beam on either side of the vessel. Blind sectors caused by any obstruction outside the wheelhouse should be kept as small as possible.²⁸⁵
- .2 From each side of the wheelhouse, the horizontal field of vision should extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel.²⁸⁶

²⁸⁰ Please refer to regulation X/3(16) of the Protocol.

²⁸² Please refer to paragraph 9.3 of the existing Guidelines and to regulation X/4 of the Protocol.

* An appropriate folio of paper nautical charts may be used as a back-up arrangement for ECDIS. Other back-up arrangements for ECDIS are acceptable (see appendix 6 to resolution A.817(19), as amended).

²⁸¹ Please refer to paragraph 9.4.1 of the existing Guidelines.

²⁸² Please refer to paragraph 9.4.2 of the existing Guidelines.

²⁸⁵ Please refer to regulation X/6(1)(e) of the Protocol.

²⁸⁶ Please refer to regulation X/6(1)(f) of the Protocol.

ANNEX 10**DRAFT RESOLUTION MSC.[...](79)
(adopted on [..] December 2004)****ADOPTION OF THE REVISED PERFORMANCE STANDARDS
FOR RADAR EQUIPMENT**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards and technical specifications, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

NOTING resolutions A.222(VII), A.278(VIII), A.477(XII), MSC.64(67), annex 4, A.820(19) and A.823(19) containing performance standards applicable to marine radars being produced and installed at different time periods in the past,

NOTING ALSO that marine radars are used in connection/integration with other navigational equipment required to carry on board ships such as, an automatic target tracking aid, ARPA, AIS, ECDIS and others,

RECOGNIZING the need for unification of maritime radar standards in general, and, in particular, for display and presentation of navigation-related information,

HAVING CONSIDERED the recommendation on the revised performance standards for radar equipment made by the Sub-Committee on Safety of Navigation at its fiftieth session,

1. ADOPTS the Revised Recommendation on Performance Standards for Radar Equipment set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that radar equipment installed on or after [1 July 2008] conform to performance standards not inferior to those set out in the Annex to the present resolution.

ANNEX

**DRAFT REVISED RECOMMENDATION ON PERFORMANCE STANDARDS
FOR RADAR EQUIPMENT**

INDEX

- 1 SCOPE OF EQUIPMENT**
- 2 APPLICATION OF THESE STANDARDS**
- 3 REFERENCES**
- 4 DEFINITIONS**
- 5 OPERATIONAL REQUIREMENTS FOR THE RADAR SYSTEM**
- 6 ERGONOMIC CRITERIA**
- 7 DESIGN AND INSTALLATION**
- 8 INTERFACING**
- 9 BACKUP AND FALLBACK ARRANGEMENTS**

1 SCOPE OF EQUIPMENT

The radar equipment should assist in safe navigation and in avoiding collision by providing an indication, in relation to own ship, of the position of other surface craft, obstructions and hazards, navigation objects and shorelines.

For this purpose, radar should provide the integration and display of radar video, target tracking information, positional data derived from own ship's position (EPFS) and geo referenced data. The integration and display of AIS information should be provided to complement radar. The capability of displaying selected parts of Electronic Navigation Charts and other vector chart information may be provided to aid navigation and for position monitoring.

The radar, combined with other sensor or reported information (e.g. AIS), should improve the safety of navigation by assisting in the efficient navigation of ships and protection of the environment by satisfying the following functional requirements:

- in coastal navigation and harbour approaches, by giving a clear indication of land and other fixed hazards;
- as a means to provide an enhanced traffic image and improved situation awareness;
- in a ship-to-ship mode for aiding collision avoidance of both detected and reported hazards;
- in the detection of small floating and fixed hazards, for collision avoidance and the safety of own ship; and
- in the detection of floating and fixed aids to navigation.

2 APPLICATION OF THESE STANDARDS

These Performance Standards should apply to all shipborne radar installations, used in any configuration, mandated by the SOLAS Convention 1974, as amended, independent of the:

- type of ship;
- frequency band in use; and
- type of display,

providing that no special requirements are specified in Table 1 and that additional requirements for specific classes of ships (in accordance with SOLAS chapters V and X) are met.

The radar installation, in addition to meeting the general requirements as set out in resolution A.694(17)*, should comply with the following performance standards.

* IEC Publication 60945.

Close interaction between different navigational equipment and systems, makes it essential to consider these standards in association with other relevant IMO standards.

TABLE 1

Differences in the performance requirements for various sizes/categories of ship/craft to which SOLAS applies

Size of ship/craft	<500 gt	500 gt to <10,000 gt and HSC<10,000 gt	All ships/craft ≥10,000 gt
Minimum operational display area diameter	180 mm	250 mm	320 mm
Minimum display area	195 x 195 mm	270 x 270 mm	340 x 340 mm
Auto acquisition of targets	-	-	Yes
Minimum <i>acquired</i> radar target capacity	20	30	40
Minimum <i>activated</i> AIS target capacity	20	30	40
Minimum <i>sleeping</i> AIS target capacity	100	150	200
Trial Manoeuvre	-	-	Yes

3 REFERENCES

References are in appendix 1.

4 DEFINITIONS

Definitions are in appendix 2.

5 OPERATIONAL REQUIREMENTS FOR THE RADAR SYSTEM

The design and performance of the radar should be based on user requirements and up-to-date navigational technology. It should provide effective target detection within the safety-relevant environment surrounding own ship and should permit fast and easy situation evaluation.*

5.1 Frequency

5.1.1 Frequency Spectrum

The radar should transmit within the confines of the ITU allocated bands for maritime radar and meet the requirements of the radio regulations and applicable ITU-R recommendations.

* Refer to MSC/Circ.878 , the Human Element Analysing Process (HEAP).

5.1.2 Radar Sensor Requirements

Radar systems of both X and S-Bands are covered in these performance standards:

- X-Band (9.2-9.5 GHz) for high discrimination, good sensitivity and tracking performance; and
- S-Band (2.9-3.1 GHz) to ensure that target detection and tracking capabilities are maintained in varying and adverse conditions of fog, rain and sea clutter.

The frequency band in use should be indicated.

5.1.3 Interference susceptibility

The radar should be capable of operating satisfactorily in typical interference conditions.

5.2 Radar Range and Bearing Accuracy

The radar system range and bearing accuracy requirements should be:

- Range** - within 30 m or 1% of the screen range scale in use, whichever is greater;
- Bearing** - within 1°.

5.3 Detection Performance and Anti-clutter Functions

All available means for the detection of targets should be used.

5.3.1 Detection

5.3.1.1 Detection in Clear Conditions

In the absence of clutter, for long range target and shoreline detection, the requirement for the radar system is based on normal propagation conditions, in the absence of sea clutter, precipitation and evaporation duct, with an antenna height of 15 m above sea level.

Based on:

- an indication of the target in at least 8 out of 10 scans or equivalent; and
- a probability of a radar detection false alarm of 10^{-4} ,

the requirement contained in Table 2 should be met as specified for X-Band and S-Band equipment.

The detection performance should be achieved using the smallest antenna that is supplied with the radar system.

Recognizing the high relative speeds possible between own ship and target, the equipment should be specified and approved as being suitable for classes of ship having normal (<30 kn) or high (>30 kn) own ship speeds (100 kn and 140 kn relative speeds respectively).

TABLE 2

Minimum detection ranges in clutter-free conditions

Target Description	Target Feature	Detection Range in NM ⁶	
Target description ⁵	Height above sea level in metres	X-Band NM	S-Band NM
Shorelines	Rising to 60	20	20
Shorelines	Rising to 6	8	8
Shorelines	Rising to 3	6	6
SOLAS ships (>5,000 gross tonnage)	10	11	11
SOLAS ships (>500 gross tonnage)	5.0	8	8
Small vessel with Radar Reflector meeting IMO Performance Standards ¹	4.0	5.0	3.7
Navigation buoy with corner reflector ²	3.5	4.9	3.6
Typical Navigation buoy ³	3.5	4.6	3.0
Small vessel of length 10 m with no radar reflector ⁴	2.0	3.4	3.0

5.3.1.2 Detection at Close Range

The short-range detection of the targets under the conditions specified in Table 2 should be compatible with the requirement in paragraph 5.4.

5.3.1.3 Detection in Clutter Conditions

Performance limitations caused by typical precipitation and sea clutter conditions will result in a reduction of target detection capabilities relative to those defined in 5.3.1.1 and Table 2.

5.3.1.3.1 The radar equipment should be designed to provide the optimum and most consistent detection performance, restricted only by the physical limits of propagation.

5.3.1.3.2 The radar system should provide the means to enhance the visibility of targets in adverse clutter conditions at close range.

¹ IMO revised performance standards for radar reflectors (resolution MSC.164(78)) – Radar Cross Section (RCS) 7.5 m² for X-Band, 0.5 m² for S-Band.

² The corner reflector (used for measurement), is taken as 10 m² for X-Band and 1.0 m² for S-Band.

³ The typical navigation buoy is taken as 5.0 m² for X-Band and 0.5 m² for S-Band.

⁴ RCS for 10 m small vessel taken as 2.5 m² for X-Band and 1.4 m² for S-Band.

⁵ Reflectors are taken as point targets, vessels as complex targets and shorelines as distributed targets (typical values for a rocky shoreline, but are dependent on profile).

⁶ Detection ranges experienced in practice will be affected by various factors, including atmospheric conditions (e.g. evaporation duct), target speed and aspect, target material and target structure. These and other factors may either enhance or degrade the detection ranges stated. At ranges between the first detection and own ship, the radar return may be reduced or enhanced by signal multi-path, which depend on factors such as antenna/target centroid height, target structure, sea state and radar frequency band.

5.3.1.3.3 Degradation of detection performance (related to the figures in Table 2) at various ranges and target speeds under the following conditions, should be clearly stated in the user manual:

- light rain (4 mm per hour) and heavy rain (16 mm per hour);
- sea state 2 and sea state 5; and
- and a combination of these.

5.3.1.3.4 The determination of performance in clutter and specifically, range of first detection, as defined in the clutter environment in 5.3.1.3.3, should be tested and assessed against a benchmark target, as specified in the Test Standard.

5.3.1.3.5 Degradation in performance due to a long transmission line, antenna height or any other factors should be clearly stated in the user manual.

5.3.2 *Gain and Anti-Clutter Functions*

5.3.2.1 Means should be provided, as far as is possible, for the adequate reduction of unwanted echoes, including sea clutter, rain and other forms of precipitation, clouds, sandstorms and interference from other radars.

5.3.2.2 A gain control function should be provided to set the system gain or signal threshold level.

5.3.2.3 Effective manual and automatic anti-clutter functions should be provided.

5.3.2.4 A combination of automatic and manual anti-clutter functions is permitted.

5.3.2.5 There should be a clear and permanent indication of the status and level for gain and all anti-clutter control functions.

5.3.3 *Signal Processing*

5.3.3.1 Means should be available to enhance target presentation on the display.

5.3.3.2 The effective picture update period should be adequate, with minimum latency to ensure that the target detection requirements are met.

5.3.3.3 The picture should be updated in a smooth and continuous manner.

5.3.3.4 The equipment manual should explain the basic concept, features and limitations of any signal processing.

5.3.4 *Operation with SARTs and Radar Beacons*

5.3.4.1 The X-Band radar system should be capable of detecting radar beacons in the relevant frequency band.

5.3.4.2 The X-Band radar system should be capable of detecting SARTs and radar target enhancers.

5.3.4.3 It should be possible to switch off those signal processing functions, including polarization modes, which might prevent an X-Band radar beacon or SARTs from being detected and displayed. The status should be indicated.

5.4 Minimum Range

5.4.1 With own vessel at zero speed, an antenna height of 15 m above the sea level and in calm conditions, the navigational buoy in Table 2 should be detected at a minimum horizontal range of 40 m from the antenna position and up to a range of 1 NM, without changing the setting of control functions other than the range scale selector.

5.4.2 Compensation for any range error should be automatically applied for each selected antenna, where multiple antennas are installed.

5.5 Discrimination

Range and bearing discrimination should be measured in calm conditions, on a range scale of 1.5 NM or less and at between 50% and 100% of the range scale selected:

5.5.1 Range

The radar system should be capable of displaying two point targets on the same bearing, separated by 40 m in range, as two distinct objects.

5.5.2 Bearing

The radar system should be capable of displaying two point targets at the same range, separated by 2.5° in bearing, as two distinct objects.

5.6 Roll and Pitch

The target detection performance of the equipment should not be substantially impaired when own vessel is rolling or pitching up to +/-10°.

5.7 Radar Performance Optimization and Tuning

5.7.1 Means should be available to ensure that the radar system is operating at the best performance. Where applicable to the radar technology, manual tuning should be provided and additionally, automatic tuning may be provided.

5.7.2 An indication should be provided, in the absence of targets, to ensure that the system is operating at the optimum performance.

5.7.3 Means should be available (automatically or by manual operation) and while the equipment is operational, to determine a significant drop in system performance relative to a calibrated standard established at the time of installation.

5.8 Radar Availability

The radar equipment should be fully operational (RUN status) within 4 minutes after switch ON from cold. A STANDBY condition should be provided, in which there is no operational radar transmission. The radar should be fully operational within 5 sec from the standby condition.

5.9 Radar Measurements – Consistent Common Reference Point (CCRP)

5.9.1 Measurements from own ship (e.g. range rings, target range and bearing, cursor, tracking data) should be made with respect to the consistent common reference point (e.g. conning position). Facilities should be provided to compensate for the offset between antenna position and the consistent common reference point on installation. Where multiple antennas are installed, there should be provision for applying different position offsets for each antenna in the radar system. The offsets should be applied automatically when any radar sensor is selected.

5.9.2 Own ship's scaled outline should be available on appropriate range scales. The consistent common reference point and the position of the selected radar antenna should be indicated on this graphic.

5.9.3 When the picture is centred, the position of the Consistent Common Reference Point should be at the centre of the bearing scale. The off-centre limits should apply to the position of the selected antenna.

5.9.4 Range measurements should be in nautical miles (NM). In addition, facilities for metric measurements may be provided on lower range scales. All indicated values for range measurement should be unambiguous.

5.9.5 Radar targets should be displayed on a linear range scale and without a range index delay.

5.10 Display Range Scales

5.10.1 Range scales of 0.25, 0.5, 0.75, 1.5, 3, 6, 12 and 24 NM should be provided. Additional range scales are permitted outside the mandatory set. Low metric range scales may be offered in addition to the mandatory set.

5.10.2 The range scale selected should be permanently indicated.

5.11 Fixed Range Rings

5.11.1 An appropriate number of equally spaced range rings should be provided for the range scale selected. When displayed, the range ring scale should be indicated.

5.11.2 The system accuracy of fixed range rings should be within 1% of the maximum range of the range scale in use or 30 m, whichever is the greater distance.

5.12 Variable Range Markers (VRM)

5.12.1 At least two variable range markers (VRMs) should be provided. Each active VRM should have a numerical readout and have a resolution compatible with the range scale in use.

5.12.2 The VRMs should enable the user to measure the range of an object within the operational display area with a maximum system error of 1% of the range scale in use or 30 m, whichever is the greater distance.

5.13 Bearing Scale

5.13.1 A bearing scale around the periphery of the operational display area should be provided. The bearing scale should indicate the bearing as seen from the consistent common reference point.

5.13.2 The bearing scale should be outside of the operational display area. It should be numbered at least every 30° division and have division marks of at least 5° and 10° clearly distinguishable from each other. 1° division marks may be presented where they are clearly distinguishable from each other.

5.14 Heading Line (HL)

5.14.1 A graphic line from the consistent common reference point to the bearing scale should indicate the heading of the ship.

5.14.2 Electronic means should be provided to align the heading line to within 0.1°. If there is more than one radar antenna (see 5.35) the heading skew (bearing offset) should be retained and automatically applied when each radar antenna is selected.

5.14.3 Provision should be made to temporarily suppress the heading line. This function may be combined with the suppression of other graphics.

5.15 Electronic Bearing Lines (EBLs)

5.15.1 At least two electronic bearing lines (EBLs) should be provided to measure the bearing of any point object within the operational display area, with a maximum system error of 1° at the periphery of the display.

5.15.2 The EBLs should be capable of measurement relative to the ships heading and relative to true north. There should be a clear indication of the bearing reference (i.e. true or relative).

5.15.3 It should be possible to move the EBL origin from the consistent common reference point to any point within the operational display area and to reset the EBL to the consistent common reference point by a fast and simple action.

5.15.4 It should be possible to fix the EBL origin or to move the EBL origin at the velocity of own ship.

5.15.5 Means should be provided to ensure that the user is able to position the EBL smoothly in either direction, with an incremental adjustment adequate to maintain the system measurement accuracy requirements.

5.15.6 Each active EBL should have a numerical readout with a resolution adequate to maintain the system measurement accuracy requirements.

5.16 Parallel Index lines (PI)

5.16.1 A minimum of four independent parallel index lines, with a means to truncate and switch off individual lines, should be provided.

5.16.2 Simple and quick means of setting the bearing and beam range of a parallel index line should be provided. The bearing and beam range of any selected index line should be available on demand.

5.17 Remote Measurement of Range and Bearing

There should be a means to measure the range and bearing of one position on the display relative to any other position within the operational display area.

5.18 User Cursor

5.18.1 A user cursor should be provided to enable a fast and concise means to designate any position on the operational display area.

5.18.2 The cursor position should have a continuous readout to provide the range and bearing, measured from the consistent common reference point, and/or the latitude and longitude of the cursor position.

5.18.3 The cursor should provide the means to select and de-select targets, graphics or objects within the operational display area. In addition, the cursor may be used to select modes, functions, vary parameters and control menus outside of the operational display area.

5.18.4 Means should be provided to easily locate the cursor position on the display.

5.18.5 The accuracy of the range and bearing measurements provided by the cursor should meet the relevant requirements for VRM and EBL.

5.19 Azimuth Stabilization

5.19.1 The heading information should be provided by a gyrocompass or by an equivalent sensor with a performance not inferior to the relevant standards adopted by the Organization.

5.19.2 Excluding the limitations of the stabilizing sensor and type of transmission system, the accuracy of azimuth alignment of the radar presentation should be within 0.5° with a rate of turn likely to be experienced with the class of ship.

5.19.3 The heading information should be displayed with a numerical resolution to permit accurate alignment with the ship gyro system.

5.19.4 The heading system should be referenced to the consistent common reference point (CCRP).

5.20 Display Mode of the Radar Picture

5.20.1 A True Motion display mode should be provided. The automatic reset of own ship may be by position on the display, or time related, or both. Where the reset is selected to occur at least on every scan or equivalent, this should be equivalent to True Motion with a fixed origin (in practice equivalent to the previous relative motion mode).

5.20.2 North Up and Course Up orientation modes should be provided. Head Up may be provided when the display mode is equivalent to True Motion with a fixed origin (in practice equivalent to the previous relative motion Head Up mode).

5.20.3 An indication of the motion and orientation mode should be provided.

5.21 Off-Centring

5.21.1 Manual off-centring should be provided to locate the selected antenna position at any point within at least 50% of the radius from the centre of the operational display area.

5.21.2 On selection of off-centred display, the selected antenna position should be capable of being located to any point on the display up to 50%, and not more than 75%, of the radius from the centre of the operational display area. A facility for automatically positioning own ship for the maximum view ahead may be provided.

5.21.3 In True Motion, the selected antenna position should automatically reset up to a 50% radius to a location giving the maximum view along own ship's course. Provision for an early reset of selected antenna position should be provided.

5.22 Ground and Sea Stabilization Modes

5.22.1 Ground and Sea stabilization modes should be provided.

5.22.2 The stabilization mode and stabilization source should be clearly indicated.

5.22.3 The source of own ships' speed should be indicated and provided by a sensor approved in accordance with the requirements of the Organization for the relevant stabilization mode.

5.23 Target Trails and Past Positions

5.23.1 Variable length (time) target trails should be provided, with an indication of trail time and mode. It should be possible to select true or relative trails from a reset condition for all true motion display modes.

5.23.2 The trails should be distinguishable from targets.

5.23.3 Either scaled trails or past positions or both, should be maintained and should be available for presentation within 2 scans or equivalent, following:

- the reduction or increase of one range scale;
- the offset and reset of the radar picture position; and
- a change between true and relative trails.

5.24 Presentation of Target Information

5.24.1 Targets should be presented in accordance with the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization and with their relevant symbols according to SN/Circ.[...].

5.24.2 The target information may be provided by the radar target tracking function and by the reported target information from the Automatic Identification System (AIS).

5.24.3 The operation of the radar tracking function and the processing of reported AIS information is defined in these standards.

5.24.4 The number of targets presented, related to display size, is defined in Table 1. An indication should be given when the target capacity of radar tracking or AIS reported target processing/display capability is about to be exceeded.

5.24.5 As far as practical, the user interface and data format for operating, displaying and indicating AIS and radar tracking information should be consistent.

5.25 Target Tracking (TT) and Acquisition

5.25.1 General

Radar targets are sourced from the radar sensor (transceiver). The signals may be filtered (reduced) with the aid of the associated clutter controls. Radar targets may be manually or automatically acquired and tracked using an automatic Target Tracking (TT) facility.

5.25.1.1 The automatic target tracking calculations should be based on the measurement of radar target relative position and own ship motion.

5.25.1.2 Any other sources of information, when available, may be used to support the optimum tracking performance.

5.25.1.3 TT facilities should be available on at least the 3, 6, and 12 NM range scales. Tracking range should extend to a minimum of 12 NM.

5.25.1.4 The radar system should be capable of tracking targets having the maximum relative speed relevant to its classification for normal or high own ship speeds (see 5.3).

5.25.2 Tracked Target Capacity

5.25.2.1 In addition to the requirements for processing of targets reported by AIS, it should be possible to track and provide full presentation functionality for a minimum number of tracked radar targets according to Table 1.

5.25.2.2 There should be an indication when the target tracking capacity is about to be exceeded. Target overflow should not degrade the radar system performance.

5.25.3 Acquisition

5.25.3.1 Manual acquisition of radar targets should be provided with provision for acquiring at least the number of targets specified in Table 1.

5.25.3.2 Automatic acquisition should be provided where specified in Table 1. In this case, there should be means for the user to define the boundaries of the auto-acquisition area.

5.25.4 Tracking

5.25.4.1 When a target is acquired, the system should present the trend of the target's motion within one minute and the prediction of the targets' motion within 3 minutes.

5.25.4.2 TT should be capable of tracking and updating the information of all acquired targets automatically.

5.25.4.3 The system should continue to track radar targets that are clearly distinguishable on the display for 5 out of 10 consecutive scans or equivalent.

5.25.4.4 The TT design should be such that target vector and data smoothing is effective, while target manoeuvres should be detected as early as possible.

5.25.4.5 The possibility of tracking errors, including target swap, should be minimized by design.

5.25.4.6 Separate facilities for cancelling the tracking of any one and of all target(s) should be provided.

5.25.4.7 Automatic tracking accuracy should be achieved when the tracked target has achieved a steady state, assuming the sensor errors allowed by the Organization.

5.25.4.7.1 For ships capable of up to 30 kn true speed, the tracking facility should present, within 1 min steady state tracking, the relative motion trend and after 3 minutes, the predicted motion of a target, within the following accuracy values (95% probability):

TABLE 3 – Tracked Target Accuracy (95% probability figures)

Time of steady state (minutes)	Relative Course (degrees)	Relative Speed (kn)	CPA (NM)	TCPA (minutes)	True Course (degrees)	True Speed (kn)
1 min: Trend	11	1.5 or 10% (whichever is greater)	1.0	-	-	-
3 min: Motion	3	0.8 or 1% (whichever is greater)	0.3	0.5	5	0.5 or 1% (whichever is greater)

Accuracy may be significantly reduced during or shortly after acquisition, own ship manoeuvre, a manoeuvre of the target, or any tracking disturbance and is also dependent on own ship's motion and sensor accuracy.

Measured target range and bearing should be within 50 m (or +/-1% of target range) and 2°.

The testing standard should have detailed target simulation tests as a means to confirm the accuracy of targets with relative speeds of up to 100 kn. Individual accuracy values shown in the table above may be adapted to account for the relative aspects of target motion with respect to that of own ship in the testing scenarios used.

5.25.4.7.2 For ships capable of speeds in excess of 30 kn (typically HSC) and with speeds of up to 70 kn, there should be additional steady state measurements made to ensure that the motion accuracy, after 3 minutes of steady state tracking, is maintained with target relative speeds of up to 140 kn.

5.25.4.8 A ground referencing function, based on a stationary tracked target, should be provided. Targets used for this function should be marked with the relevant symbol defined in SN/Circ.[...].

5.26 Automatic Identification System (AIS) Reported Targets

5.26.1 General

Reported targets sourced from the AIS may be filtered according to user-defined parameters. Targets may be sleeping, or may be activated. Activated targets are treated in a similar way to radar tracked targets.

5.26.2 AIS Target Capacity

In addition to the requirements for radar tracking, it should be possible to display and provide full presentation functionality for a minimum number of sleeping and activated AIS targets according to Table 1. There should be an indication when the capacity of processing/display of AIS targets is about to be exceeded.

5.26.3 Filtering of AIS Sleeping Targets

To reduce display clutter, a means to filter the presentation of sleeping AIS targets should be provided, together with an indication of the filter status. (e.g. by target range, CPA/TCPA or AIS target class A/B, etc.). It should not be possible to remove individual AIS targets from the display.

5.26.4 Activation of AIS Targets

A means to activate a sleeping AIS target and to deactivate an activated AIS target should be provided. If zones for the automatic activation of AIS targets are provided, they should be the same as for automatic radar target acquisition. In addition, sleeping AIS targets may be automatically activated when meeting user defined parameters (e.g. target range, CPA/TCPA or AIS target class A/B).

5.26.5 AIS Presentation Status

TABLE 4 - The AIS presentation status should be indicated as follows:

Function	Cases to be Presented		Presentation
AIS ON/OFF	AIS processing switched ON/ graphical presentation switched OFF	AIS processing switched ON/ graphical presentation switched ON	Alphanumeric or graphical
Filtering of sleeping AIS targets	Filter status	Filter status	Alphanumeric or graphical
Activation of Targets		Activation criteria	Graphical
CPA/TCPA Alarm	Function ON/OFF Sleeping targets included	Function ON/OFF Sleeping targets included	Alphanumeric and graphical
Lost Target Alarm	Function ON/OFF Lost target Filter Criteria	Function ON/OFF Lost target Filter Criteria	Alphanumeric and graphical
Target Association	Function ON/OFF Association Criteria Default Target Priority	Function ON/OFF Association Criteria Default Target Priority	Alphanumeric

5.27 AIS Graphical Presentation

Targets should be presented with their relevant symbols according to the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization and SN/Circ.[...].

5.27.1 AIS targets that are displayed should be presented as sleeping targets by default.

5.27.2 The course and speed of a tracked radar target or reported AIS target should be indicated by a predicted motion vector. The vector time should be adjustable and valid for presentation of any target regardless of its source.

5.27.3 A permanent indication of vector mode, time and stabilization should be provided.

5.27.4 The consistent common reference point should be used for the alignment of tracked radar and AIS symbols with other information on the same display.

5.27.5 On large scale/low range displays, a means to present the true scale outline of an activated AIS target should be provided. It should be possible to display the past track of activated targets.

5.28 AIS and Radar Target Data

5.28.1 It should be possible to select any tracked radar or AIS target for the alphanumeric display of its data. A target selected for the display of its alphanumeric information should be identified by the relevant symbol. If more than one target is selected for data display, the relevant symbols and the corresponding data should be clearly identified. There should be a clear indication to show that the target data is derived from radar or from AIS.

5.28.2 For each selected tracked radar target, the following data should be presented in alphanumeric form: source(s) of data, actual range of target, actual bearing of target, predicted target range at the closest point of approach (CPA), predicted time to CPA (TCPA), true course of target, true speed of target.

5.28.3 For each selected AIS target the following data should be presented in alphanumeric form: Source of data, ship's identification, navigational status, position and its quality, if available, range, bearing, COG, SOG, CPA, and TCPA. Ships heading and rate of turn should be also be made available. Additional target information should be provided on request.

5.28.4 If the received AIS information is incomplete, the absent information should be clearly indicated as 'missing' within the target data field.

5.28.5 The data should be displayed and continually updated, until another target is selected for data display or until the window is closed.

5.28.6 Means should be provided to present own ship AIS data on request.

5.29 Operational Alarms

A clear indication of the cause for all alarm criteria should be given.

5.29.1 If the calculated CPA and TCPA values of a tracked target or activated AIS target are less than the set limits:

- A CPA/TCPA alarm should be given.
- The target should be clearly indicated.

5.29.2 The preset CPA/TCPA limits applied to targets from different radar and AIS should be identical. As a default state, the CPA/TCPA alarm functionality should be applied to all activated AIS targets. On user request the CPA/TCPA alarm functionality may also be applied to sleeping targets.

5.29.3 If a user defined acquisition/activation zone facility is provided, a target not previously acquired/activated entering the zone, or is detected within the zone, should be clearly identified with the relevant symbol and an alarm should be given. It should be possible for the user to set ranges and outlines for the zone.

5.29.4 The system should alert the user if a tracked radar target is lost, rather than excluded by a pre-determined range or pre-set parameter. The target's last position should be clearly indicated on the display.

5.29.5 It should be possible to enable or disable the lost target alarm function for AIS targets. A clear indication should be given if the lost target alarm is disabled.

If the following conditions are met for a lost AIS target:

- The AIS lost target alarm function is enabled.
- The target is of interest, according to lost target filter criteria.
- A message is not received for a set time, depending on the nominal reporting rate of the AIS target.

Then:

- The last known position should be clearly indicated as a lost target and an alarm be given.
- The indication of the lost target should disappear if the signal is received again, or after the alarm has been acknowledged.
- A means of recovering limited historical data from previous reports should be provided.

5.30 AIS and Radar Target Association

An automatic target association function based on harmonized criteria avoids the presentation of two target symbols for the same physical target.

5.30.1 If the target data from AIS and radar tracking are both available and if the association criteria (e.g. position, motion) are fulfilled such that the AIS and radar information are considered as one physical target, then as a default condition, the activated AIS target symbol and the alphanumeric AIS target data should be automatically selected and displayed.

5.30.2 The user should have the option to change the default condition to the display of tracked radar targets and should be permitted to select either radar tracking or AIS alphanumeric data.

5.30.3 For an associated target, if the AIS and radar information become sufficiently different, the AIS and radar information should be considered as two distinct targets and one activated AIS target and one tracked radar target should be displayed. No alarm should be raised.

5.31 Trial Manoeuvre

The system should, where required by table 1, be capable of simulating the predicted effects of own ships manoeuvre in a potential threat situation and should include own ship's dynamic characteristics. A trial manoeuvre simulation should be clearly identified. The requirements are:

- The simulation of own ship course and speed should be variable.
- A simulated time to manoeuvre with a countdown should be provided.
- During simulation, target tracking should continue and the actual target data should be indicated.
- Trial manoeuvre should be applied to all tracked targets and at least all activated reported targets.

5.32 The Display of Maps, Navigation Lines and Routes

5.32.1 It should be possible for the user to manually create and change, save, load and display simple maps/navigation lines/routes referenced to own ship or a geographical position. It should be possible to remove the display of this data by a simple operator action.

5.32.2 The maps/navigation lines/routes may consist of lines, symbols and reference points.

5.32.3 The appearance of lines, colours and symbols are as defined in SN/Circ.[...].

5.32.4 The maps/navigation lines/route graphics should not significantly degrade the radar information.

5.32.5 The maps/navigation lines/routes should be retained when the equipment is switched OFF.

5.32.6 The maps/navigation lines/route data should be transferable whenever a relevant equipment module is replaced.

5.33 The Display of Charts

5.33.1 The radar system may provide the means to display ENC and other vector chart information within the operational display area to provide continuous and real-time position monitoring. It should be possible to remove the display of chart data by a single operator action.

5.33.2 The ENC information should be the primary source of information and should comply with IHO relevant standards. Status of other information should be identified with a permanent indication. Source and update information should be made available.

5.33.3 As a minimum, the elements of the ECDIS Standard Display should be made available for individual selection by category or layer, but not as individual objects.

5.33.4 The chart information should use the same reference and co-ordinate criteria as the radar/AIS, including datum, scale, orientation, CCRP and stabilization mode.

5.33.5 The display of radar information should have priority. Chart information should be displayed such that radar information is not substantially masked, obscured or degraded. Chart information should be clearly perceptible as such.

5.33.6 A malfunction of the source of chart data should not affect the operation of the radar/AIS system.

5.33.7 Symbols and colours should comply with the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization.

5.34 Alarms and Indications

Alarms and indications should comply with the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization.

5.34.1 A means should be provided to alert the user of “picture freeze”.

5.34.2 Failure of any signal or sensor in use, including; gyro, log, azimuth, video, sync and heading marker, should be alarmed. System functionality should be limited to a fall back mode or in some cases, the display presentation should be inhibited (see fallback modes, section 9).

5.35 Integrating Multiple Radars

5.35.1 The system should safeguard against single point system failure. Fail-safe condition should be applied in the event of an integration failure.

5.35.2 The source and any processing or combination of radar signals should be indicated.

5.35.3 The system status for each display position should be available.

6 ERGONOMIC CRITERIA

6.1 Operational Controls

6.1.1 The design should ensure that the radar system is simple to operate. Operational controls should have a harmonized user interface and be easy to identify and simple to use.

6.1.2 The radar system should be capable of being switched ON or OFF at the main system radar display or at a control position.

6.1.3 The control functions may be dedicated hardware, screen accessed or a combination of these; however the primary control functions should be dedicated hardware controls or soft keys, with an associated status indication in a consistent and intuitive position.

6.1.4 The following are defined as primary radar control functions and should be easily and immediately accessible:

Radar Standby/RUN, Range scale selection, Gain, tuning function (if applicable), Anti-clutter rain, Anti-clutter sea, AIS function on/off, Alarm acknowledge, Cursor, a means to set EBL/VRM, display brightness and acquisition of radar targets.

6.1.5 The primary functions may also be operated from a remote operating position in addition to the main controls.

6.2 Display Presentation

6.2.1 The display presentation should comply with the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization.

6.2.2 The colours, symbols and graphics presented should comply with SN/Circ.[xx].

6.2.3 The display sizes should conform to those defined in Table 1.

6.3 Instructions and Documentation

6.3.1 Documentation Language

The operating instructions and manufacturer's documentation should be written in a clear and comprehensible manner and should be available at least in the English language.

6.3.2 Operating Instructions

The operating instructions should contain a qualified explanation and/or description of information required by the user to operate the radar system correctly, including:

- appropriate settings for different weather conditions;
- monitoring the radar system's performance;
- operating in a failure or fall-back situation;
- limitations of the display and tracking process and accuracy, including any delays;
- using heading and SOG/COG information for collision avoidance;
- limitations and conditions of target merging and de-merging;
- criteria of selection for automatic activation and cancellation of targets;
- methods applied to display AIS targets, target association and any limitations;
- principles underlying the trial manoeuvre technology, including simulation of own ship's manoeuvring characteristics, if provided;
- alarms and indications;
- installation requirements as listed under section 7.5;
- radar range and bearing accuracies; and
- any special operation (e.g. tuning) for the detection of SARTs.

6.3.3 *Manufacturer's Documentation*

6.3.3.1 The manufacturer's documentation should contain a description of the radar system and factors which may affect detection performance, including any latency in signal processing.

6.3.3.2 Documentation should describe the basis of AIS filter criteria and AIS/radar target association criteria.

6.3.3.3 The equipment documentation should include full details of installation information, including additional recommendations on unit location and factors that may degrade performance or reliability.

7 DESIGN AND INSTALLATION

7.1 Design for Servicing

7.1.1 As far as is practical, the radar system should be of a design to facilitate simple fault diagnosis and maximum availability.

7.1.2 The radar system should include a means to record the total operational hours for any components with a limited life.

7.1.3 The documentation should describe any routine servicing requirements and should include details of any restricted life components.

7.2 Display

The display device physical requirements should meet those specified in the performance standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays adopted by the Organization and those specified in Table 1.

7.3 Transmitter Mute

The equipment should provide a mute facility to inhibit the transmission of radar energy over a preset sector. The mute sector should be set up on installation. An indication of sector mute status should be available.

7.4 Antenna

7.4.1 The antenna should be designed to start operating and to continue to operate in relative wind speeds likely to be encountered on the class of ship on which it is installed.

7.4.2 The combined radar system should be capable of providing an appropriate information update rate for the class of ship on which it is installed.

7.4.3 The antenna side lobes should be consistent with satisfying the system performance as defined in this standard.

7.4.4 There should be a means to prevent antenna rotation and radiation during servicing, or while personnel are in the vicinity of up-mast units.

7.5 Radar System Installation

Requirements and guidelines for the radar system installation should be included in the manufacturers' documentation. The following subjects should be covered:

7.5.1 The Antenna

Blind sectors should be kept to a minimum, and should not be placed in an arc of the horizon from the right ahead direction to 22.5° abaft the beam and especially should avoid the right ahead direction (relative bearing 000°). The installation of the antenna should be in such a manner that the performance of the radar system is not substantially degraded. The antenna should be mounted clear of any structure that may cause signal reflections, including other antenna and deck structure or cargo. In addition, the height of the antenna should take account of target detection performance relating to range of first detection and target visibility in sea clutter.

7.5.2 The Display

The orientation of the display unit should be such that the user is looking ahead, the lookout view is not obscured and there is minimum ambient light on the display.

7.6 Operation and Training

7.6.1 The design should ensure that the radar system is simple to operate by trained users.

7.6.2 A target simulation facility should be provided for training purposes.

8 INTERFACING

8.1 Input Data

The radar system should be capable of receiving the required input information from:

- a gyro-compass or transmitting heading device (THD);
- a speed and distance measuring equipment (SDME);
- an electronic position fixing system (EPFS);
- an Automatic Identification System (AIS); or
- other sensors or networks providing equivalent information acceptable to the Organization.

The radar should be interfaced to relevant sensors required by this performance standards in accordance with recognized international standards.*

8.2 Input Data Integrity and Latency

8.2.1 The radar system should not use data indicated as invalid. If input data is known to be of poor quality this should be clearly indicated.

8.2.2 As far as is practical, the integrity of data should be checked, prior to its use, by comparison with other connected sensors or by testing to valid and plausible data limits.

8.2.3 The latency of processing input data should be minimized.

8.3 Output Data

8.3.1 Information provided by any radar output interface to other systems should be in accordance with international standards*.

8.3.2 The radar system should provide an output of the display screen data for the voyage data recorder (VDR).

8.3.3 At least one normally closed contact (isolated) should be provided for indicating failure of the radar.

* Refer to IEC publication 61162.

8.3.4 The radar should have a bi-directional interface to facilitate communication so that alarms from the radar can be transferred to external systems and so that audible alarms from the radar can be muted from external systems, the interface should comply with relevant international standards.

9 BACKUP AND FALLBACK ARRANGEMENTS

In the event of partial failures and to maintain minimum basic operation, the fallback arrangements listed below should be provided. There should be a permanent indication of the failed input information.

9.1 Failure of Heading Information (Azimuth Stabilization)

9.1.1 The equipment should operate satisfactorily in an unstabilized head-up mode.

9.1.2 The equipment should switch automatically to the unstabilized head up mode within 1 minute after the azimuth stabilization has become ineffective.

9.1.3 If automatic anti-clutter processing could prevent the detection of targets in the absence of appropriate stabilization, the processing should switch off automatically within 1 minute after the azimuth stabilization has become ineffective.

9.1.4 An indication should be given that only relative bearing measurements can be used.

9.2 Failure of Speed through the Water Information

A means of manual speed input should be provided and its use clearly indicated.

9.3 Failure of Course and Speed Over Ground Information

The equipment may be operated with course and speed through the water information.

9.4 Failure of Position Input Information

The overlay of chart data and geographically referenced maps should be disabled if only a single Reference Target is defined and used, or the position is manually entered.

9.5 Failure of Radar Video Input Information

In the absence of radar signals, the equipment should display target information based on AIS data. A frozen radar picture should not be displayed.

9.6 Failure of AIS Input Information

In the absence of AIS signals, the equipment should display the radar video and target database.

9.7 Failure of an Integrated or Networked System

The equipment should be capable of operating equivalent to a stand alone system.

Appendix 1 - References

IMO SOLAS chapters IV, V and X IMO resolution A.278(VII)

IMO resolution A.424(XI)
IMO resolution A.477(XII)
IMO resolution A.694(17)

IMO resolution A.817(19), as amended
IMO resolution A.821(19)

IMO resolution A.824(19)

IMO resolution MSC.86(70)
IMO resolution MSC.64(67)

IMO resolution MSC.112(73)

IMO resolution MSC.114(73)

IMO resolution MSC.116(73)

IMO MSC/Circ.982

IHO S-52 appendix 2
IEC 62388

IEC 60945

IEC 61162

IEC 61174

IEC 62288
ISO 9000 (all parts)

Carriage rules.

Supplement to the recommendation on PS for navigational radar equipment.

Performance standards for gyro-compasses.

Performance standards for radar equipment.

General Requirements for ship borne radio equipment forming part of the global maritime distress and safety system and for electronically navigational aids.

Performance Standards for ECDIS

Performance standards for gyro-compasses for high-speed craft.

Performance standards for devices to indicate speed and distance.

Performance standards for INS.

Recommendations on new and amended performance standards (Annex 2 revised by MSC.114(73)).

Revised performance standards for ship borne global positioning (GPS) receiver equipment.

Revised performance standards for ship borne DGPS and DGLONASS maritime radio beacon receiver equipment.

Performance standards for marine transmitting heading devices (THD).

Guidelines on ergonomic criteria for bridge equipment and layout.

Colour and symbol specification for ECDIS.

Radar Test Standard (replacing 60872 and 60936 series of test standards).

Maritime navigation and radio communication equipment and systems – General requirements – Methods of testing and required test results.

Maritime navigation and radio communication equipment and systems – Digital interfaces.

Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operationa and performance requirements, methods of testing and required test results.

Presentation and display of navigation information.

Quality management/assurance standards.

Appendix 2 – Definitions

Activated AIS target	<p>A target representing the automatic or manual activation of a sleeping target for the display of additional graphically presented information. The target is displayed by an “activated target” symbol including:</p> <ul style="list-style-type: none">• a vector (COG / SOG);• the heading; and• ROT or direction of turn indication (if available) to indicate initiated course changes.
Acquisition of a radar target	<p>Process of acquiring a target and initiating its tracking.</p>
Activation of an AIS target	<p>Activation of a sleeping AIS target for the display of additional graphical and alphanumerical information.</p>
Acquired radar target	<p>Automatic or manual acquisition initiates radar tracking. Vectors and past positions are displayed when data has achieved a steady state condition.</p>
AIS	<p>Automatic Identification System.</p>
AIS target	<p>A target generated from an AIS message. See activated target, lost target, selected target and sleeping target.</p>
Associated target	<p>If an acquired radar target and an AIS reported target have similar parameters (e.g. position, course, speed) complying with an association algorithm, they are considered to be the same target and become an associated target.</p>
Acquisition/activation zone	<p>A zone set up by the operator in which the system should automatically acquire radar targets and activate reported AIS targets when entering the zone.</p>
CCRP	<p>Consistent Common Reference Point: A location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.</p>
CPA/TCPA	<p>Closest Point of Approach / Time to the Closest Point of Approach: Distance to the closest point of approach (CPA) and time to the closest point of approach (TCPA). Limits are set by the operator related to own ship.</p>
Course Over Ground (COG)	<p>Direction of the ship's movement relative to the earth, measured on board the ship, expressed in angular units from true north.</p>

Course Through Water (CTW)	Direction of the ship's movement through the water, defined by the angle between the meridian through its position and the direction of the ship's movement through the water, expressed in angular units from true north.
Dangerous target	A target whose predicted CPA and TCPA are violating the values as preset by the operator. The respective target is marked by a “dangerous target” symbol.
Display modes	<p>Relative motion: means a display on which the position of own ship remains fixed, and all targets move relative to own ship.</p> <p>True motion: a display across which own ship moves with its own true motion.</p>
Display orientation	<p>North up display: an azimuth stabilized presentation which uses the gyro input (or equivalent) and north is upper most on the presentation.</p> <p>Course up display: an azimuth stabilized presentation which uses the gyro input and the ship’s course is upper most on the presentation at the time of selection.</p> <p>Head up display: an unstabilized presentation in which own ship’s heading is upper most on the presentation.</p>
ECDIS	Electronic Chart Display and Information System.
ECDIS Display Base	The level of information which cannot be removed from the ECDIS display, consisting of information which is required at all times in all geographic areas and all circumstances. It is not intended to be sufficient for safe navigation.
ECDIS Standard Display	The level of information that should be shown when a chart is first displayed on ECDIS. The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner's needs.
ENC	Electronic Navigational Chart. The database standardized as to content, structure and format according to relevant IHO standards and issued by, or on the authority of, a Government.
EPFS	Electronic Position Fixing System.
ERBL	Electronic bearing line carrying a marker, which is combined with the range marker, used to measure range and bearing from own ship or between two objects.

Evaporation duct	A low lying duct (a change in air density) that traps the radar energy so that it propagates close to the sea surface. Ducting may enhance or reduce radar target detection ranges.
Heading	Direction in which the bow of a ship is pointing expressed as an angular displacement from north.
HSC	High-speed craft (HSC) are vessels which comply with the definition in SOLAS for high speed craft.
Latency	The delay between actual and presented data.
Lost AIS target	A target representing the last valid position of an AIS target before the reception of its data was lost. The target is displayed by a “lost AIS target” symbol.
Lost tracked target	Target information is no longer available due to poor, lost or obscured signals. The target is displayed by a “lost tracked radar target” symbol.
Maps/Nav lines	Operator defined or created lines to indicate channels, Traffic Separation Schemes or borders of any area important for navigation.
Operational display area	Area of the display used to graphically present chart and radar information, excluding the user dialog area. On the chart display this is the area of the chart presentation. On the radar display this is the area encompassing the radar image.
Past positions	Equally time-spaced past position marks of a tracked or reported target and own ship. The past positions’ track may be either relative or true.
Radar	(R adio d irection a nd r anging) A radio system that allows the determination of distance and direction of reflecting objects and of transmitting devices.
Radar beacon	A navigation aid which responds to the radar transmission by generating a radar signal to identify its position and identity.
Radar composite system	An equipment to transmit radio microwave signals, receive, process and display both radar signals and information from other sources such as AIS data.

Radar detection false alarm	The probability of a radar false alarm represents the probability that noise will cross the detection threshold and be called a target when only noise is present.
Radar target	Any object fixed or moving whose position and motion is determined by successive radar measurements of range and bearing.
Radar target enhancer	An electronic radar reflector, the output of which is an amplified version of the received radar pulse without any form of processing except limiting.
Reference target	Symbol indicating that the associated tracked stationary target (e.g. a navigational mark) is used as a speed reference for the ground stabilization.
Relative bearing	Direction of a target's position from own ship's reference location expressed as an angular displacement from own ship's heading.
Relative course	Direction of motion of a target relative to own ship's direction. (Bearing).
Relative motion	Combination of relative course and relative speed.
Relative speed	Speed of a target relative to own ship's speed data.
Rate of turn	Change of heading per time unit.
SART	Search And Rescue Transponder.
SDME	Speed and Distance Measurement Equipment.
Selected target	A manually selected target for the display of detailed alphanumeric information in a separate data display area. The target is displayed by a "selected target" symbol.
Sleeping AIS target	A target indicating the presence and orientation of a vessel equipped with AIS in a certain location. The target is displayed by a "sleeping target" symbol. No additional information is presented until activated.
Stabilization modes	<p>Ground stabilization: Display mode in which speed and course information are referred to the ground, using ground track input data, or EPFS as reference.</p> <p>Sea stabilization: Display mode in which speed and course information are referred to the sea, using gyro and water speed log input as reference.</p>

Standard display	The level of information that should be shown when a chart is first displayed on ECDIS. The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner's needs.
Standard radar reflector	Reference reflector mounted 3.5 m above sea level with 10 m ² effective reflecting area at X-Band.
Steady state tracking	Tracking a target, proceeding at steady motion: <ul style="list-style-type: none">- after completion of the acquisition process, or- without a manoeuvre of target or own ship, or- without target swap or any disturbance.
Speed Over Ground (SOG)	Speed of the ship relative to the earth, measured on board of the ship.
Speed Through Water	Speed of the ship relative to the water surface.
SOLAS	International Convention for the Safety of Life at Sea.
Suppressed area	An area set up by the operator within which targets are not acquired.
Target swap	Situation in which the incoming radar data for a tracked target becomes incorrectly associated with another tracked target or a non-tracked radar echo.
Target's predicted motion	Prediction of a target's future course and speed based on linear extrapolation from its present motion as determined by past measurements of its range and bearing on the radar.
Target Tracking (TT)	Computer process of observing the sequential changes in the position of a radar target in order to establish its motion. Such a target is a Tracked Target.
Trails	Tracks displayed by the radar echoes of targets in the form of an afterglow. Trails may be true or relative.
Trial manoeuvre	Graphical simulation facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes, by displaying the predicted future status of at least all acquired or activated targets as a result of own ship's simulated manoeuvres.
True bearing	Direction of a target from own ship's reference location or from another target's position expressed as an angular displacement from true north.
True course	Direction of motion relative to ground or to sea, of a target expressed as an angular displacement from north.

True motion	Combination of true course and true speed.
True speed	Speed of a target relative to ground, or to sea.
Vector modes	<p>True vector: Vector representing the predicted true motion of a target, showing course and speed with reference to the ground.</p> <p>Relative vector: Predicted movement of a target relative to own ship's motion.</p>
User Configured Presentation	A display presentation configured by the user for a specific task at hand. The presentation may include radar and/or chart information, in combination with other navigation or ship related data.
User Dialog Area	Is an area of the display consisting of data fields and/or menus that is allocated to the interactive presentation and entry or selection of operational parameters, data and commands mainly in alphanumeric form.

ANNEX 11

DRAFT AMENDMENTS TO SOLAS REGULATION V/19

CHAPTER V

SAFETY OF NAVIGATION

Regulation 19 – Carriage requirements for shipborne navigational systems and equipment

- 1 Add a new sub-paragraph to paragraph 2.4, with the following text:

"2.4.8 The information provided through the AIS shall be presented to the OOW. The presentation shall comply with the relevant guidelines and standards adopted by the Organization."

ANNEX 12**LIAISON STATEMENT TO THE INTERNATIONAL
TELECOMMUNICATION UNION, RADIOCOMMUNICATION STUDY GROUPS,
WORKING PARTY 8B**

The IMO would like to thank the ITU-R for the liaison statement Document 8B/13 concerning performance standards for maritime radionavigation radar.

In response the IMO would like to inform the ITU-R that the performance standards for radars used on ships to which the International Convention for the Safety of Life at Sea (SOLAS) applies, have recently been reviewed. The purpose of the review was to consolidate the performance standards into one document and include a requirement for the presentation of information deriving from the Automatic Identification System (AIS) on the radar display. The review also considered the existing requirement for radars to be able to trigger RACONs and concluded that for radars operating in the band 2 900 – 3 100 MHz, this requirement could be removed thus allowing innovative design of radar operating in this band.

At a meeting of the Sub-Committee on the Safety of Navigation held in July 2004, new draft performance standards were prepared and these are attached for information as requested. These performance standards address some of the information requested from IMO.

IMO wishes ITU-R to note that there are requirements for these radars to be carried for safety purposes on ships as defined in SOLAS Convention. Sufficient frequency bandwidth should therefore be maintained for these radars and sharing with other services is not at all desirable. Maritime radionavigation radars should be given priority to secure safety of life and protection of the environment, especially in coastal waters where radar is most important. The IMO is pleased to note that the maritime radionavigation service is defined in the Radio Regulations (Article 1.44) as intended for the benefit and safe operation of ships.

Regarding protection from unwanted interference therefore, the IMO would like ITU-R to note that any reduction in the detectability and resolution of targets could have serious consequences to safety.

IMO however notes the work progressing in ITU-R on sharing studies and will be pleased to continue to maintain liaison.

ANNEX 13

**LIST OF TASKS ASSIGNED TO THE SUB-COMMITTEE AND WORK TO BE UNDERTAKEN
ON LARGE PASSENGER SHIP SAFETY**

Task	Work to be undertaken	Target completion date	Comments
Awareness of water depth and squat issues (Task 9.1)	To be included in the work to be under taken on task 9.6	2006	
Review availability of international aids to navigation for vessels operating in remote areas (Task 9.2)	To be included in the work to be under taken on task 9.6	2006	
Review pilot and bridge team interface management issues (Task 9.3)	No further action required by the Sub-Committee		STW Sub-Committee invited to take further action on this issue if deemed necessary
Determine whether additional bridge team resources are necessary for operation in high density traffic areas (Task 9.4)	No further action required by the Sub-Committee		STW Sub-Committee invited to take further action on this issue if deemed necessary
Quality and availability of hydrographic information for operation in remote areas (Task 9.5)	No further action required by the Sub-Committee		IHO invited to keep the Sub-Committee informed of their on-going work related to the quality and availability of hydrographic information for operation in remote areas

Task	Work to be undertaken	Target completion date	Comments
Voyage planning issues (Task 9.6)	To prepare supplementary guidelines to resolution A.893(21) on voyage planning for large passenger ships operating in remote areas	2006	Supplementary guidelines will be prepared as a standalone document based on resolution A.893(21). Matters which are already adequately covered in the above resolution will be incorporated by reference, as appropriate. Tasks 9.1 and 9.2 are to be included in the supplementary guidance
Reliability of navigation equipment issues (Task 9.7)	No further action required by the Sub-Committee		Sufficient IMO instruments already in place addressing the reliability of navigation equipment
Need for requiring modern navigation equipment to avoid collisions and groundings (Task 9.8)	No further action required by the Sub-Committee		Issue already being adequately dealt with and therefore no further special action is necessary with regard to large passenger ships
Consider the need for guidance for the effective use of VTS technology (Task 9.9)	No further action required by the Sub-Committee		Issue already being adequately dealt with and therefore no further special action is necessary with regard to large passenger ships

ANNEX 14**DRAFT MSC CIRCULAR****GUIDELINES ON EARLY ASSESSMENT OF HULL DAMAGE AND
POSSIBLE NEED FOR ABANDONMENT OF BULK CARRIERS**

1 The Maritime Safety Committee, at its seventy-sixth session (2 to 13 December 2002), considered recommendations for decision-making emanating from various formal safety assessment (FSA) studies on bulk carrier safety. In particular, the Committee agreed that a circular should be prepared addressing bulk carriers which may not withstand flooding of any one cargo hold and containing information on the action to be taken in case of flooding of such holds, making sure that the professional judgement of the master is not undermined, ~~for possible posting in the bridge.~~

2 The Committee, at its [seventy-eight~~th~~^{ninth} session (1-10 December 2004)], having considered the recommendations made by the Sub-Committee on Ship Design and Equipment at its forty-sixth session, the Sub-Committee on Safety of Navigation at its forty-ninth and fiftieth sessions and the Sub-Committee on Standards of Training and Watchkeeping at its thirty-fifth session, approved Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers, as set out in the annex. Some common causes of hull damage are contained in the Appendix to the annex.

3 Member Governments are invited to urge companies, as defined in the ISM Code, that operate bulk carriers flying their flag, to issue ship specific guidance, based on the annexed Guidelines, to the masters of such bulk carriers with a view to improving the precautionary measures and procedures for emergencies on board their ships. This ship specific guidance should be brought to the attention of all crew members during familiarization training.

ANNEX

GUIDELINES ON EARLY ASSESSMENT OF HULL DAMAGE AND POSSIBLE NEED FOR ABANDONMENT OF BULK CARRIERS

1 Provoked by the disappearance and loss of a number of bulk carriers from mid 1970s onwards the international shipping community has grown increasingly concerned that such ships are particularly vulnerable to rapid loss. Consequently, IMO has been taking action over the years to address ~~the~~ **this** problem ~~head-on and to find appropriate solutions. to the problems identified.~~ Among such actions, the Organization has adopted amendments to the 1974 SOLAS Convention, by introducing chapter XII in 1997 (amended in 2002), and other related provisions in chapter II-1, and has also amended the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (resolution A.744(18)) on several occasions. More recently, a number of formal safety assessment (FSA) studies on bulk carrier safety have been carried out. From these studies the Maritime Safety Committee of IMO concluded at its seventy-sixth session in December 2002 that bulk carriers do deserve continued special attention and a number of measures were approved to address the issues identified, both structural and operational.

2 Records of bulk carrier losses indicated, in a large proportion of the cases studied, that ship's masters often appeared to be unaware of the imminent danger they were in. Many lost their lives together with the other seafarers on board as a consequence. Ship losses were frequently so rapid that the ship did not have time to send a distress signal.

3 The records studied show that in the event of loss of hull integrity, in many cases, bulk carriers should be evacuated as quickly as possible. **EARLY ASSESSMENT OF THE SITUATION IS THEREFORE IMPERATIVE, COMBINED WITH ALERTING A MARITIME RESCUE CO-ORDINATION CENTRE, ALERTING ALL PERSONNEL ONBOARD AND MAKING PREPARATIONS FOR EVACUATION.** This is of particular importance for single skin bulk carriers which may not be capable of withstanding flooding of any cargo hold.

4 ~~Masters and Operators~~ **Companies** should consider the following advice carefully with a view to improving their own precautionary measures and procedures for emergencies. The advice applies equally to ships other than bulk carriers when carrying dense cargoes.

Heavy cargoes

5 In most cases in which bulk carriers have been lost, heavy cargoes such as iron and other dense ores are a common factor. Ships are also vulnerable when carrying certain break-bulk cargoes such as steel products. This could include other ship types. The small volume taken up by the cargo in the ships' holds results in a large unoccupied space. This provides potential in a flooding scenario for large volumes of water to rapidly destroy the ship's residual buoyancy and, in the case of smaller vessels, its stability. Larger vessels are also highly susceptible to structural failure due to increases of weights caused by the influx of water.

6 Heavy cargoes place high loads on the structure, and structural failure is therefore more probable when subjected to the additional forces associated with flooding.

Structure

7 Deterioration of structure through corrosion, fatigue and damage is identified as a principal factor in the loss of many bulk carriers. Failing to identify such deterioration may lead to sudden and unexpected failure. Bulk carrier crews may be unaware of the vulnerability of these vessel types. The consequential loss of a ship carrying heavy cargo can be expected to be very rapid, should a major failure occur.

Forward flooding

8 Spaces forward of the collision bulkhead will, in the event of flooding, significantly affect the trim of the ship and reduce freeboard at the bow. In extreme weather this further threatens the ship as green seas come inboard and impact on hatch covers and other fittings that protect the water or weathertight integrity of the ship. Shell plating in the region of the bow protects the fore peak tank and other spaces as do air pipes and ventilators. If any of them are damaged the ship's ability to resist further escalation of flooding is compromised.

Early assessment

14 9 When it occurs or is likely to occur, masters should quickly assess damage to their ships by being alert to water ingress and its consequences. The following guidelines are given to assist them in this assessment.

Unusual motion or attitude

15 10 If a ship takes on an unusual trim or heel, or if her motions become changed, breach of the hull envelope should be suspected immediately:

- Unusual collections of water on decks may be indicating trim or heel abnormality.
- Sudden changes of heel or trim will indicate flooding or in smaller ships with lighter cargoes it may indicate cargo shift.
- Jerky lateral motions can be indicative of large scale sloshing as would be the case if a hold were flooded.
- On smaller ships, slowing of the ship's roll period may indicate excessive water within the hull - a serious threat to stability. Ships fitted with GM meters should be able to identify any unexpected changes in GM.
- Increases of water boarding forward decks may indicate flooding of a forward compartment. Trim and freeboard changes are notoriously difficult to assess from an after bridge.

16 11 Methods of detection

- Hatch covers may be dislodged by pressure and/or sloshing from within a hold if flooding occurs through side shell or bulkhead.
- Sudden pressurisation of compartments adjoining those that are damaged or flooded will indicate failure of internal subdivision, most notably bulkheads.

- Spaces may be monitored, either using gauging or bilge/water level alarms⁺— Forward store spaces can also be monitored audibly using “talkback” telephones that may be fitted in forward spaces. Anchor impacts and water in the space can be detected using telephones of the type that remain active until switched off from the bridge.
- Hull Stress Monitors, where fitted, may be able to detect unexpected longitudinal hull girder bending. Torsional stresses may also be detected through differential changes between port and starboard strain gauges.
- Visual monitoring from the bridge using binoculars, where fitted, by closed circuit television, can give indication of abnormal water on deck and local damage. However, assessment of trim or freeboard using this method is difficult.
- Assessment of trim changes can in certain conditions be detected by noting the level of the horizon, when visible, against a known reference point on the foremast.
- Draught and trim can be assessed using draught gauges. Changes are much more discernible using this method than by visual means from above decks.

Early readiness for evacuation

~~17~~ **12** In the event of identifying or even suspecting that the ship may have sustained damage, ship’s personnel should immediately be called to their emergency stations. A HIGH PRIORITY SHOULD BE PLACED ON PREPARING EQUIPMENT FOR EVACUATION. Abandonment should however only be invoked on the spoken orders of the master following assessment of the risk.

~~18~~ **13** Contact with a Maritime Rescue Co-ordination Centre (MRCC) and/or owners should be made early if the master has any suspicion that the ship is damaged. An URGENCY signal is justified and this should be upgraded to DISTRESS if the ship is confirmed as damaged.

Training

~~19~~ **14** Masters should place a strong emphasis on evacuation training so that donning of protective suits and lifejackets, launching of survival craft, and operation of EPIRBs and SARTs is a familiar process to all ships’ personnel. Also included should be shutdown procedures for main and auxiliary machinery, which can, if left running, hinder launching of survival craft.

⁺—IMO has now mandated the fitting of water level detectors for all bulk carriers. Owners are urged to fit such equipment ahead of the date of implementation (1 July 2004).

Investigation

20 15 Masters may wish to investigate any suspected water ingress more closely but preparations for evacuating the ship should be made WITHOUT DELAY and concurrent with any investigation. Remote methods of observation are preferable to sending personnel onto decks, particularly in bad weather and/or at night. Deck floodlights should be used if necessary to try and identify abnormalities. Detrimental effects on watchkeepers' night vision are of secondary importance in such circumstances.

21 16 In circumstances deemed justifiable for sending personnel onto decks that may be frequently awash with green water, at least two personnel should go to investigate. They should wear harnesses that attach them to a lifeline and to each other and should be in constant (radio) communication with the bridge. Each harness should be provided with two easily operated clips so that wearers are always attached to the ship's structure, even when passing across from one lifeline or structural attachment to another. Lifelines on both sides of the deck should be rigged at all times and progress along the deck should always be via the lee or sheltered side. When weather conditions deteriorate is not the time to begin rigging such measures. Fencing or shipside rails alone should not be relied upon without attachment by harness.

22 17 When a loss of hull integrity is known or suspected, personnel should **not** be sent onto decks that are being regularly submerged or deeply awash. In such circumstances the ship should be regarded as in imminent danger and priority should be given to preparations for evacuation.

Collision

23 18 In the event of a collision ~~[in which a ship loaded with [dense] [bulk] cargo² is struck by another vessel,]~~ masters should call the ship's personnel to emergency stations with a strong emphasis on preparing to evacuate the ship. ~~This is particularly important and urgent in cases where a ship is loaded with dense bulk cargo². Older designs of bulk carriers and small ships with fewer holds are particularly prone to sudden progressive flooding if the damage occurs abaft any strengthened bulkheads in the forward part of the ship. In traffic separation zones This type of collision damage is more probable resulting from collisions in dense traffic or overtaking as most close encounters are likely to be due to misjudged overtaking or crossing manoeuvres. Bulk carriers are usually slower, less manoeuvrable and as a consequence, more exposed to being struck by other vessels, particularly from astern.~~

Safety and survival

24 19 In the circumstances highlighted above, particular emphasis has been placed on being ready for early evacuation or abandonment of the vessel. For ships carrying high-density cargoes this is of importance while they are at sea. There may however be cases where abandonment may be the worst option and for bulk carriers as with other ship types this is most probably true in the event of grounding. In close proximity to shore, and especially in bad weather, life-saving craft launched from the ship are unlikely to save the occupants from the perils of the shoreline and the process of launching the craft probably carries much greater danger than remaining on board. Again, early contact with a Maritime Rescue Co-ordination Centre is important and the master should not hesitate to broadcast an Urgency or Distress message. ~~The ship is better able to stay above water~~ When it is already aground and although the ship it may be severely damaged

² Dense cargo should be understood as bulk ores that do not contact sides or bulkheads but should also include certain break-bulk cargoes such as steel products, which share similar characteristics.

or broken in two, the accommodation blocks in such strandings usually survive long enough for helicopter evacuation, as organized and co-ordinated by the Maritime Rescue Co-ordination Centre, when weather conditions abate.

25 20 Companies are reminded that the master ~~should be~~ is the one who decides on whether or not the ship ~~should~~ is to be abandoned. This guidance is provided to assist the master in making that decision and is based on the overriding principle that human life is more important than property.

26 21 Companies are also reminded that emergency contingency planning forms an integral part of the International Safety Management Code required by SOLAS chapter IX. They should therefore assess the actual risk to their ships with consideration of the information given in these Guidelines and provide in their Safety Management System appropriate advice to assist the master in assessing the action to take in a situation involving flooding of the ship.

APPENDIX

Causes of damage and failure

~~19~~ **1** Damage to side shell, externally through contact with docksides or tugs and, internally from impact by cargo dislodging equipment during discharge, can result in initiating fractures and/or fatigue of the structure. In single side-skin bulk carriers, bulkheads, trunks and ballast tank boundaries, can present “hard spots” that concentrate forces where the change in construction occurs (e.g. longitudinal to transverse framing). This may lead to undetected fractures.

~~10~~ **2** Internal degradation through corrosion may be accelerated through chemical action from certain cargoes. Welds in particular may be subject to “grooving” corrosion, in which the material forming the weld corrodes at a faster rate than the plating to which it is attached. Fatigue failure may result due to loss of cross-sectional area in the plating joints.

~~11~~ **3** In ballast holds, sloshing forces due to partially filled spaces (such as may occur when changing ballast for environmental reasons) may result in damage to the structure. This damage may go unnoticed if it is in inaccessible positions. Sloshing is also a known cause of secondary damage after a space has become flooded.

~~12~~ **4** Damage to bow plating such as is possible through impacts associated with swinging or loosely stowed anchors may cause an initiating fracture or fatigue in bow shell plating that could lead to failure and subsequent flooding. Internal integrity of forward spaces (that are usually used for ballast and/or stores) is therefore of vital importance. Corrosion degradation will seriously reduce the ability of plating and stiffening to withstand the forces to which it will be subjected. In larger ships, partially filled forepeak tanks may set up destructive sloshing forces unless the tank structure is designed for this.

~~13~~ **5** External forces – horizontal and/or vertical - may cause hatch cover dislodgement. The cargo hatchway, if it loses its protection in this way, is a major access for water ingress and a serious threat to the integrity of the hull.}

ANNEX 15

REVISED WORK PROGRAMME OF THE SUB-COMMITTEE

		Target completion date/number of sessions needed for completion	Reference
1	Routeing of ships, ship reporting and related matters	Continuous	MSC 72/23, paragraphs 10.69 to 10.71, 20.41 and 20.42; NAV 49/19, section 3
2	Casualty analysis (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.1 and 20.4; NAV 49/19, section 14
3	Consideration of IACS unified interpretation	Continuous	MSC 78/WP.8/Add.2, paragraph 22.12
H.1	World-wide radionavigation system (WWRNS)	2005	MSC 75/24, paragraph 22.37
	.1 new developments in the field of GNSS, especially Galileo	2005	NAV 50/19, paragraphs 13.1 to 13.3
	.2 review and amendment of IMO policy for GNSS (resolution A.915(22))	2005	NAV 48/19, paragraph 16.3.2
	.3 recognition of radionavigation systems as components of the WWRNS (resolution A.953(23))	2005	NAV 48/19, paragraph 16.3.3
H.2	Large passenger ship safety: effective voyage planning for large passenger ships	2004 [2006]	MSC 73/21, paragraph 18.23; MSC 74/24, paragraph 21.4; NAV 50/19, section 11

Notes: 1 "H" means a high priority item and "L" means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.

2 Items printed in bold letters have been selected for the provisional agenda for NAV 51, shown in annex 2.

Revised work programme of the Sub-Committee (continued)

		Target completion date/number of sessions needed for completion	Reference
H.3	Anchoring, mooring and towing equipment (co-ordinated by DE)	2004	MSC 74/24, paragraph 21.30; NAV 50/19, section 6
H.4	Review of performance standards for radar equipment	2004	MSC 74/24, paragraphs 9.16 to 9.17; MSC 75/24, paragraph 22.34; NAV 50/19, section 9
H.5 3	Review of the OSV Guidelines (co-ordinated by DE)	3 sessions 2007	MSC 75/24, paragraph 22.4
H.6	Requirements for the display and use of AIS information on shipborne navigational displays	2004	MSC 75/24, paragraph 22.35; NAV 50/19, section 4
H.7 4	Review of the 2000 HSC Code and amendments to the DSC Code and the 1994 HSC Code (co-ordinated by DE)	2005	MSC 75/24, paragraphs 12.22 and 2.8; MSC 76/23, paragraphs 8.19 and 20.4; NAV 50/19, section 5
H.8 5	Measures to enhance maritime security	2004 [2005]	MSC 75/24, paragraph 22.9; NAV 50/19, section 12
H.9 6	ITU matters, including Radio-communication ITU-R Study Group 8 matters	2006	MSC 69/22, paragraphs 5.69 and 5.70; NAV 50/19, section 10
H.10	Guidance on early abandonment of bulk carriers (in co-operation with DE)	2004	MSC 76/23, paragraph 20.31; NAV 50/19, section 15
H.11	Revision of the fishing vessel Safety Code and Voluntary Guidelines (co-ordinated by SLF)	2004	MSC 77/26, paragraph 23.27; NAV 50/19, section 7

Revised work programme of the Sub-Committee (continued)

		Target completion date/number of sessions needed for completion	Reference
H.12	7 Review of the SPS Code (co-ordinated BY DE)	2 sessions 2006	MSC 78/WP.8/Add.2, paragraph 24.9
H.13	8 Revision of the performance standards for INS and IBS	2 sessions 2006	MSC 78/WP.8/Add.2, paragraph 24.30
H.14	9 Evaluation of the use of ECDIS and ENC development	2 sessions* [2006]	MSC 78/WP.8/Add.2, paragraph 24.33
L.1	Revision of the forms of nuclear ship safety certificates (co-ordinated by DE)	2 sessions	MSC 75/24, paragraph 22.6; NAV 50/19, section 18
L.2	Recommendations on high-risk oceanic crossings by adventure craft (in co-operation with COMSAR)	2004	MSC 76/23, paragraph 20.30; NAV 50/19, section 8

* To be included in the provisional agenda for NAV 51.

ANNEX 16**PROVISIONAL AGENDA FOR THE FIFTY-FIRST SESSION***

Opening of the session

- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Routeing of ships, ship reporting and related matters *
- 4 Revision of the performance standards for INS and IBS
- 5 Review of the 2000 HSC Code and amendments to the DSC Code and the 1994 HSC Code
- 6 Evaluation of the use of ECDIS and ENC development
- 7 Review of the OSV Guidelines
- 8 Review of the SPS Code
- 9 ITU matters, including Radiocommunication ITU-R Study Group 8 matters
- 10 Large passenger ship safety: effective voyage planning for large passenger ships
- 11 Measures to enhance maritime security
- 12 World-wide radionavigation system (WWRNS)
- 13 Casualty analysis *
- 14 Consideration of IACS unified interpretation *
- 15 Work programme and agenda for NAV 52
- 16 Election of Chairman and Vice-Chairman for 2006
- 17 Any other business
- 18 Report to the Maritime Safety Committee

* Items under continuous review.

ANNEX 17**DRAFT MSC CIRCULAR****ADDITIONAL GUIDANCE FOR THE UNIFORM APPLICATION OF RULE 1(e) OF
THE INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA,
1972, AS AMENDED**

1 The Maritime Safety Committee at its [seventy-ninth session (1 to 10 December 2004),] noted that Rule 1(e) of the International Regulations for Preventing Collisions at Sea, 1972, as amended, allows that “whenever the Government concerned shall have determined that a vessel of special construction or purpose cannot comply fully with the provisions of any of these Rules with respect to number, position, range or arc of visibility of lights or shapes, as well as to the disposition and characteristics of sound-signalling appliances, such vessel shall comply with such other provisions in regard to number, position, range or arc of visibility of lights or shapes, as well as to the disposition on characteristics of sound-signalling appliances as her Government shall have determined to be the closest possible compliance with these Rules in respect of that vessel.”

2 The Committee also noted that reports received from mariners, indicate that difficulties have been encountered at sea at night, in determining the aspect of an approaching vessel particularly on reciprocal or near reciprocal courses when the two masthead lights of the other vessel are not positioned on the centre line of the vessel.

3 The Committee further noted that this could lead to the ship’s officer arriving at a wrong decision as to whether the risk of collision exists or not; particularly taking into account that Rule 14(b) provides that “such a situation shall be deemed to exist when a vessel sees the other ahead or nearly ahead and by night she could see the masthead lights of the other in a line or nearly in a line and/or both sidelights and by day she observes the corresponding aspect of the other vessel”.

4 This circular complements the guidance provided in MSC/Circ.473 of 18 May 1987.

5 Member Governments are invited to take into account the potential problem posed to other vessels, whenever they grant exemptions under Rule 1(e) and to do so only in very extraordinary circumstances. Financial aspects should not be a consideration for granting exemption.

ANNEX 18

**DRAFT SN CIRCULAR ON GUIDANCE ON THE USE OF UN/LOCODE
IN THE DESTINATION FIELD IN AIS MESSAGES**

1 The Sub-Committee on Safety of Navigation (NAV), at its fiftieth session (5 to 9 July 2004) agreed on a guidance on the use of UN/LOCODE in the destination field in AIS messages.

2 The Maritime Safety Committee, at its [seventy-ninth session (1 to 10 December 2004)], concurred with the Sub-Committee's view and approved the annexed guidance and encouraged the use of UN/LOCODE.

3 Member Governments are invited to bring this information to the attention of Vessel Traffic Services and masters of their ships and recommend them to use the UN/LOCODE.

ANNEX

DRAFT GUIDANCE ON THE USE OF UN/LOCODE IN THE DESTINATION FIELD IN AIS MESSAGES

1 Automatic Identification System (AIS) is a working system for ship identification and tracking that has the capability to transfer predefined messages to other ships and shore stations. One such messages includes a text field designated for destination.

2 The mariner is able to enter ship's destination into the AIS at the start of each voyage, and to keep this information updated. Evidence shows that mariners are using different names for the same location when entering destination data in their AIS units. This situation leads to confusion and inefficiency in data interchange. Therefore, there is a need to harmonize data input when entering port information, by adopting an available universal protocol.

3 The AIS field for destination allows for "free text" of up to 20 characters. This results in numerous variations in the spelling of the same port, making it difficult for other ships and shore authorities to identify the port uniquely. Also the use of the data in information systems is difficult or impossible without considerable manual effort.

4 It is recommended to use the existing destination field for entering both the port of departure and the next port of call (space for 20 characters of 6 bit ASCII is available), using the UN/LOCODE.

The UN/LOCODE

The UN Economic Commission for Europe's Recommendation 16, entitled, *UN/LOCODE – CODES FOR PORTS AND OTHER LOCATIONS* states, *inter alia*:

The identification of a particular location is frequently required in information interchange in international trade and transport, to direct the movement of goods e.g. in addresses, in shipping marks and in data elements identifying ports of call, ports or places of loading and unloading, ports or places of transshipment and destination, etc.

The names of such locations are often spelt in different ways and sometimes the same location is give different names in different languages (e.g. LIVORNO – LIBOURNE – LEGHORN-LONDON-LONDRES-LONDRA-WARSAW-VARSOVIE-WARSZAWA), which creates confusion and difficulties in data interchange. The identification in a unique unambiguous way of any place involved in international trade is therefore an essential element for facilitation of trade procedures and documentation. This can be achieved using agreed, unique coded designations for such locations; this would have the added advantage of permitting the exchange of data in a safer and more economic way.

Full information can be found at:

www.unece.org/cefact/locode/service/main.htm

Recommended use of the UN/LOCODE

7 The recommended format is to indicate the port of departure at the first six positions of the data field followed a separator and then the code for the next port of call.

8 In order to identify that it is a LOCODE, to separate the locations and to indicate the 'from' and 'to' ports, a '>' symbol should be used as a separator. See example below.

A ship is leaving Dubai bound for Rotterdam. Use of the UN/LOCODE would represent this voyage as below:

"AE DXB>NL RTM"

9 If the next port of call is unknown shall "?? ???" should be entered instead of the UN/LOCODE in the corresponding place in the data field. See example below:

"AE DXB>?? ???"

10 If the port of departure does not have a designated UN/LOCODE then "XX XXX" should be entered instead of the UN/LOCODE in the corresponding place in the data field. See example below.

"XX XXX>US PBI"

11 If the next port of call does not have a designated UN/LOCODE the commonly accepted English name of the destination port should be entered, preceded by "===" (3 "equals signs"). If no such name is known the locally used name should be entered. In this case there may not be enough space available to indicate the port of departure. See example below:

"===Orrviken"

12 If only the general area of destination is known the name or accepted abbreviation of the area preceded by "===" ("three equal signs") should be entered. See example below:

"NL RMT> === US WC"

Indicating a destination on United States West Coast.

ANNEX 19

DRAFT AMENDMENTS TO THE 1974 SOLAS CONVENTION REGARDING THE FORMS
OF NUCLEAR SHIP SAFETY CERTIFICATESINTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS
AMENDED

APPENDIX CERTIFICATES

Form of Nuclear Passenger Ship Safety Certificate

- 1 The form of the certificate is replaced by the following:

“FORM OF NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE

NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE

This Certificate shall be supplemented by a Record of Equipment (Form PNUC)

(Official seal)

(State)

for an¹ international voyage
a short

Issued under the provisions of the
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974,
as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

(name of the State)

by

(person or organization authorized)

Particulars of ship²

Name of ship

Distinctive number or letters

Port of registry

Gross tonnage

Sea areas in which ship is certified to operate (regulation IV/2)

IMO Number³

¹ Delete as appropriate.

² Alternatively, the particulars of the ship may be placed horizontally in boxes.

³ In accordance with IMO ship identification number scheme adopted by the Organization by resolution A.600(15), this information may be included voluntarily.

Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced

THIS IS TO CERTIFY:

- 1 That the ship has been surveyed in accordance with the requirements of regulation VIII/9 of the Convention.
- 2 That the ship, being a nuclear ship, complied with all the requirements of chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship; and that:
 - 2.1 the ship complied with the requirements of the Convention as regards:
 - .1 the structure, main and auxiliary machinery, boilers and other pressure vessel, including the nuclear propulsion plant and the collision protective structure;
 - .2 the watertight subdivision arrangements and details;
 - .3 the following subdivision load lines:

Subdivision load lines assigned and marked on the ship's side amidships (regulation II-1/13)	Freeboard	To apply when the spaces in which passengers are carried include the following alternative spaces
C.1
C.2
C.3

- 2.2 the ship complied with the requirements of the Convention as regards structural fire protection, fire safety systems and appliances and fire control plans;
- 2.3 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;
- 2.4 the ship was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Convention;
- 2.5 the ship complied with the requirements of the Convention as regards radio installations;
- 2.6 the functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;
- 2.7 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
- 2.8 the ship was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Convention and the International Regulations for Preventing Collisions at Sea in force;

2.9 in all other respects the ship complied with the relevant requirements of the regulations, so far as these requirements apply thereto.

This certificate is valid until

Completion date of the survey on which this certificate is based:
(dd/mm/yyyy)

Issued atthe.....day of.....20.....
(Place of issue of certificate)

.....
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

.....(Signature)

Endorsement where the renewal survey has been completed and regulation I/14(d) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with regulation I/14(d) of the Convention, be accepted as valid until

Signed:.....
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/14(e) or I/14(f) applies

This certificate shall, in accordance with regulation I/14(e)/I/14(f)¹ of the Convention, be accepted as valid until

¹ Delete as appropriate.

Signed:.....
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate) ”

2 The following Record of Equipment for the Nuclear Passenger Ship Safety Certificate is added after the form of the Nuclear Cargo Ship Safety Certificate:

**“RECORD OF EQUIPMENT FOR THE NUCLEAR PASSENGER SHIP SAFETY
CERTIFICATE (FORM PNUC)**

This Record shall be permanently attached to the
Nuclear Passenger Ship Safety Certificate

RECORD OF EQUIPMENT FOR COMPLIANCE WITH
THE INTERNATIONAL CONVENTION FOR THE SAFETY
OF LIFE AT SEA, 1974, AS MODIFIED BY THE PROTOCOL
OF 1988 RELATING THERETO

1 Particulars of ship

Name of ship

Distinctive number or letters.....

Number of passengers for which certified

Minimum number of persons with required qualifications
to operate the radio installations

2 Details of life-saving appliances

1	Total number of persons for which life-saving appliances are provided	.....	.....
2	Total number of lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of partially enclosed lifeboats (regulation III/21.4.2 and LSA Code, section 4.5)	.....	.....

2.3	Number of self-righting partially enclosed lifeboats (regulation III/43)	.....	.....
2.3	Number of totally enclosed lifeboats (regulation III/21 ⁴² and LSA Code, section 4.6)	.....	.....
2.4	Other lifeboats		
2.4.1	Number	.....	.....
2.4.2	Type	.....	.....
3	Number of motor lifeboats (included in the total lifeboats shown above)	.....	.....
3.1	Number of lifeboats fitted with searchlights	.....	.....
4	Number of rescue boats	.....	.....
4.1	Number of boats which are included in the total lifeboats shown above	.....	.....
5	Liferafts		
5.1	Those for which approved launching appliances are required		
5.1.1	Number of liferafts	.....	.....
5.1.2	Number of persons accommodated by them	.....	.....
5.2	Those for which approved launching appliances are not required		
5.2.1	Number of liferafts	.....	.....
5.2.2	Number of persons accommodated by them	.....	.....
6	Buoyant apparatus		
6.1	Number of apparatus	.....	.....
6.2	Number of persons capable of being supported	.....	.....
7	Number of lifebuoys	.....	.....
8	Number of lifejackets		
9	Immersion suits	.....	.....
9.1	Total number	.....	.....
9.2	Number of suits complying with the requirements for lifejackets	.....	.....
10	Number of thermal protective aids ¹	.....	.....
11	Radio installations used in life-saving appliances	.....	.....
11.1	Number of radar transponders	.....	.....
11.2	Number of two-way VHF radiotelephone apparatus	.....	.....

¹ Excluding those required by the LSA Code, paragraphs 4.1.5.1.24, 4.4.8.31 and 5.1.2.2.13, regulations III/38.5.1.24, III/41.8.31 and III/47.2.2.13.

3 *Details of radio facilities*

Item		Actual provision
1	Primary systems	
1.1	VHF radio installation	
1.1.1	DSC encoder	.....
1.1.2	DSC watch receiver	.....
1.1.3	Radiotelephony	.....
1.2	MF radio installation	
1.2.1	DSC encoder	.....
1.2.2	DSC watch receiver	.....
1.2.3	Radiotelephony	.....
1.3	MF/HF radio installation	
1.3.1	DSC encoder	.....
1.3.2	DSC watch receiver	.....
1.3.3	Radiotelephony	.....
1.3.4	Direct-printing radiotelegraphy	.....
1.4	Inmarsat ship earth station	.....
2	Secondary means of alerting	.....
3	Facilities for reception of marine safety information	
3.1	NAVTEX receiver	.....
3.2	EGC receiver	.....
3.3	HF direct-printing radiotelegraph receiver	.....
4	Satellite EPIRB	
4.1	COSPAS-SARSAT	.....
4.2	Inmarsat	.....
5	VHF EPIRB	.....
6	Ship's radar transponder	.....

4 *Methods used to ensure availability of radio facilities* (regulations IV/15.6 and 15.7)

- 4.1 Duplication of equipment
- 4.2 Shore-based maintenance
- 4.3 At-sea maintenance capability

5 *Details of navigation systems and equipment*

Item	Actual provision
1.1 Standard magnetic compass*
1.2 Spare magnetic compass*
1.3 Gyro compass*
1.4 Gyro compass heading repeater*
1.5 Gyro compass bearing repeater*
1.6 Heading or track control system*
1.7 Pelorus or compass bearing device*
1.8 Means of correcting heading and bearings
1.9 Transmitting heading device (THD)*
2.1 Nautical charts/Electronic chart display and information system (ECDIS)**
2.2 Back up arrangements for ECDIS
2.3 Nautical publications
2.4 Back up arrangements for electronic nautical publications
3.1 Receiver for a global navigation satellite system/terrestrial radio navigation system* **
3.2 9 GHz radar*
3.3 Second radar (3 GHz/9 GHz**)*
3.4 Automatic radar plotting aid (ARPA)*
3.5 Automatic tracking aid*
3.6 Second automatic tracking aid*
3.7 Electronic plotting aid*
4 Automatic identification system (AIS)
5 Voyage data recorder (VDR)
6.1 Speed and distance measuring device (through the water)*
6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*
6.3 Echo sounding device*
7.1 Rudder, propeller, thrust, pitch and operational mode indicator*
7.2 Rate of turn indicator*
8.1 Rudder, propeller, thrust, pitch and operational mode indicator
8.2 Rate of turn indicator
9 Sound reception system*
10 Telephone to emergency steering position*
11 Daylight signalling lamp*
12 Radar reflector*
13 International Code of Signals and Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at
(Place of issue of the Record)

.....
(Date of issue)

.....
(Signature of duly authorized official
issuing the Record)

..

(Seal or stamp of the issuing authority, as appropriate)

Form of Nuclear Cargo Ship Safety Certificate

3 The form of the certificate is replaced with the following:

“FORM OF SAFETY CERTIFICATE FOR NUCLEAR CARGO SHIPS

NUCLEAR CARGO SHIP SAFETY CERTIFICATE

This Certificate shall be supplemented by a Record of Equipment (Form CNUC)

(Official seal)

(State)

Issued under the provisions of the
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE
AT SEA, 1974 as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

.....
(name of the State)

by
(person or organization authorized)

Particulars of ship⁴

Name of ship

Distinctive number or letters

Port of registry

Gross tonnage

⁴ Alternatively, the particulars of the ship may be placed horizontally in boxes.

Sea areas in which ship is certified to operate (regulation IV/2)

Length of ship (regulation III/3/12).....

IMO Number⁵

Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced

THIS IS TO CERTIFY:

- 1 That the ship has been surveyed in accordance with the requirements of regulation VIII/9 of the Convention.
- 2 That the ship, being a nuclear ship, complied with all the requirements of chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship; and that:
 - 2.1 the ship complied with the requirements of the Convention as regards fire safety systems and appliances and fire control plans;
 - 2.2 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;
 - 2.3 the ship was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Convention;
 - 2.4 the ship complied with the requirements of the Convention as regards radio installations;
 - 2.5 the functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;
 - 2.6 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
 - 2.7 the ship was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Convention and the International Regulations for Preventing Collisions at Sea in force;
 - 2.8 in all other respects the ship complied with the relevant requirements of the regulations, so far as these requirements apply thereto.

⁵ In accordance with IMO ship identification number scheme adopted by the Organization by resolution A.600(15), ~~this information may be included voluntarily.~~

This certificate is valid until

Completion date of the survey on which this certificate is based:.....
(dd/mm/yyyy)

Issued atthe.....day of.....20.....
(Place of issue of certificate)

.....
(Date of issue)

.....
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

(Signature)

Endorsement where the renewal survey has been completed and regulation I/14(d) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with regulation I/14(d) of the Convention, be accepted as valid until

Signed:.....
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/14(e) or I/14(f) applies

This certificate shall, in accordance with regulation I/14(e)/I/14(f)⁶ of the Convention, be accepted as valid until

Signed:.....
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate) ”

⁶ Delete as appropriate.

4 The following Record of Equipment for the Nuclear Cargo Ship Safety Certificate is added after the form of the Nuclear Cargo Ship Safety Certificate:

**“RECORD OF EQUIPMENT FOR THE NUCLEAR CARGO SHIP SAFETY
CERTIFICATE (FORM CNUC)**

This Record shall be permanently attached to the
Nuclear Cargo Ship Safety Certificate

RECORD OF EQUIPMENT FOR COMPLIANCE WITH
THE INTERNATIONAL CONVENTION FOR THE SAFETY
OF LIFE AT SEA, 1974, AS MODIFIED BY THE PROTOCOL
OF 1988 RELATING THERETO

1 Particulars of ship

Name of ship

Distinctive number or letters.....

Minimum number of persons with required qualifications
to operate the radio installations

2 Details of life-saving appliances

1	Total number of persons for which life-saving appliances are provided	.....
		Port side	Starboard side
2	Total number of lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of partially totally enclosed lifeboats (regulation III/3142 and LSA Code, section 4.6)	.....	.....
2.3	Number of self-righting partially enclosed lifeboats (regulation III/3142 and LSA Code, section 4.8)	.....	.....
2.4	Number of totally enclosed fire-protected lifeboats (regulation III/3142 and LSA Code, section 4.9)	.....	.....
2.5	Other lifeboats		
2.5.1	Number	.....	.....
2.5.2	Type	.....	.....
2.6	Number of free-fall lifeboats	.....	.....
2.6.1	Totally enclosed (regulation III/3142 and LSA Code, section 4.7)	.....	.....
2.6.2	Self-contained (regulation III/3142 and LSA Code, section 4.8)	.....	.....
2.6.3	Fire-protected (regulation III/3142 and LSA Code, section 4.9)	.....	.....

2 Details of life-saving appliances (continued)

3	Number of motor lifeboats (included in the total lifeboats shown above)	.....
3.1	Number of lifeboats fitted with searchlights	.....
4	Number of rescue boats	.....
4.1	Number of boats which are included in the total lifeboats shown above	.....
5	Liferafts	.....
5.1	Those for which approved launching appliances are required	.....
5.1.1	Number of liferafts	.....
5.1.2	Number of persons accommodated by them	.....
5.2	Those for which approved launching appliances are not required	.....
5.2.1	Number of liferafts	.....
5.2.2	Number of persons accommodated by them	.....
5.3	Number of liferafts required by regulation III/31.1.4	.....
6	Buoyant apparatus	
6.1	Number of apparatus	.....
6.2	Number of persons capable of being supported	.....
6	Number of lifebuoys	
7	Number of lifejackets	.....
8	Immersion suits	.....
8.1	Total number	.....
8.2	Number of suits complying with the requirements for lifejackets	.....
9	Number of thermal protective aids ⁷	.....
10	Radio installations used in life-saving appliances	.....
10.1	Number of radar transponders	.....
10.2	Number of two-way VHF radiotelephone apparatus	.....

⁷ Excluding those required by the LSA Code, paragraphs 4.1.5.1.24, 4.1.8.31 and 5.1.2.2.13 regulations III/38.5.1.24, III/41.8.31 and III/47.2.2.13.

3 *Details of radio facilities*

Item		Actual provision
1	Primary systems	.....
1.1	VHF radio installation	.....
1.1.1	DSC encoder	.....
1.1.2	DSC watch receiver	.....
1.1.3	Radiotelephony	.....
1.2	MF radio installation	
1.2.1	DSC encoder	.....
1.2.2	DSC watch receiver	.....
1.2.3	Radiotelephony	.....
1.3	MF/HF radio installation	
1.3.1	DSC encoder	.....
1.3.2	DSC watch receiver	.....
1.3.3	Radiotelephony	.....
1.3.4	Direct-printing radiotelegraphy	.....
1.4	Inmarsat ship earth station	.....
2	Secondary means of alerting	.....
3	Facilities for reception of marine safety information	
3.1	NAVTEX receiver	.....
3.2	EGC receiver	.....
3.3	HF direct-printing radiotelegraph receiver	.....
4	Satellite EPIRB	
4.1	COSPAS-SARSAT	.....
4.2	Inmarsat	.....
5	VHF EPIRB	.....
6	Ship's radar transponder	.....

4 *Methods used to ensure availability of radio facilities* (regulations IV/15.6 and 15.7)

- 4.1 Duplication of equipment
- 4.2 Shore-based maintenance
- 4.3 At-sea maintenance capability

5 *Details of navigation systems and equipment*

	Actual provision
1.1 Standard magnetic compass*
1.2 Spare magnetic compass*
1.3 Gyro compass*
1.4 Gyro compass heading repeater*
1.5 Gyro compass bearing repeater*
1.6 Heading or track control system*
1.7 Pelorus or compass bearing device*
1.8 Means of correcting heading and bearings
1.9 Transmitting heading device (THD)*
2.1 Nautical charts/Electronic chart display and information system (ECDIS)**
2.2 Back up arrangements for ECDIS
2.3 Nautical publications
2.4 Back up arrangements for electronic nautical publications
3.1 Receiver for a global navigation satellite system/terrestrial radio navigation system*, **
3.2 9 GHz radar*
3.3 Second radar (3 GHz/9 GHz**)*
3.4 Automatic radar plotting aid (ARPA)*
3.5 Automatic tracking aid*
3.6 Second automatic tracking aid*
3.7 Electronic plotting aid*
4 Automatic identification system (AIS)
5 Voyage data recorder (VDR)**/ Simplified voyage data recorder (S-VDR)
6.1 Speed and distance measuring device (through the water)*
6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*
6.3 Echo sounding device*
7.1 Rudder, propeller, thrust, pitch and operational mode indicator*
7.2 Rate of turn indicator*
8.1 Rudder, propeller, thrust, pitch and operational mode indicator
8.2 Rate turn indicator
9 Sound reception system*
10 Telephone to emergency steering position*
11 Daylight signalling lamp*
12 Radar reflector*
13 International Code of Signals and Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate.

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at
(Place of issue of the Record)

.....
(Date of issue)

.....
*(Signature of duly authorized
official issuing the Record)*

(Seal or stamp of the issuing authority, as appropriate) ”

ANNEX 20

**DRAFT SN CIRCULAR ON GUIDELINES FOR THE INSTALLATION OF A
SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS)**

1 The Sub-Committee on Safety of Navigation (NAV), at its fiftieth session (5 to 9 July 2004), agreed on the amendments to the guidelines for the installation of a Shipborne Automatic Identification System (AIS), set out in the annex. The amendments describe the connection of the shipborne AIS installations to a power source.

2 The Maritime Safety Committee, at its [seventy-ninth session (1 to 10 December 2004)], concurred with the Sub-Committee's view and approved the annexed amendments.

3 Member Governments are invited to bring the annexed guidelines to the attention of all concerned.

ANNEX

**DRAFT AMENDMENTS TO THE GUIDELINES FOR INSTALLATION OF A
SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS)**

2.4 *Power source*

- 1 The existing text of paragraph 2.4 is replaced by the following:

"The AIS should ideally be connected through an uninterrupted power supply (UPS) to the ship's power supply as defined in SOLAS chapter II-1."
